

ISSN: 0974-1291



HIPPOCRATIC JOURNAL OF UNANI MEDICINE

Volume 12 • Number 4

October – December 2017

CENTRAL COUNCIL FOR RESEARCH IN UNANI MEDICINE

HIPPOCRATIC JOURNAL OF UNANI MEDICINE

Volume 12, Number 4, October – December 2017

Hippocratic J. Unani Med. 12(4): 1 - 98, 2017



CENTRAL COUNCIL FOR RESEARCH IN UNANI MEDICINE

Ministry of Ayurveda, Yoga & Naturopathy, Unani, Siddha and Homoeopathy (AYUSH)

Government of India

Hippocratic Journal of Unani Medicine

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Fax: +91-11-28522965 • Email : unanimedicine@gmail.com • Website: <http://ccrum.res.in>

Annual Subscription: ₹ 300/- (India) US \$ 100/- (Other Countries)

Single Issue: ₹ 150/- (India) US\$ 50/- (Other Countries)

Payment in respect of subscription may be sent by bank draft in favour of Director General, CCRUM, New Delhi.

Published by Shri R.U. Choudhury, Assistant Director (Admn.) on behalf of Central Council for Research in Unani Medicine (CCRUM)

61-65 Institutional Area (Opposite 'D' Block), Janakpuri, New Delhi – 110058

Printed at India Offset Press, A-1, Mayapuri Industrial Area, Phase-1, New Delhi – 110064

Editorial


The Unani System of Medicine is a comprehensive medical system which meticulously deals with various states of health and disease. It provides promotive, preventive, curative and rehabilitative healthcare. The fundamentals, diagnosis and treatment modalities of the system are based on scientific principles and holistic concepts of health and healing. Unani System of Medicine occupies a key position in our national healthcare delivery system. The AYUSH (Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homoeopathy) systems of healthcare are patronized by the Ministry of AYUSH, Government of India and specific policies for their integration into public healthcare delivery system have been formulated. In addition, well planned governmental initiatives are underway for mainstreaming of these systems to effectively address the emerging health challenges of the country.

In this endeavor, the contributions of the Central Council for Research in Unani Medicine and its peripheral institutes located in different parts of the country go a long way in developing nature-based Unani drugs for various health problems and generating scientific data for validation of drugs used in Unani Medicine for centuries. The Council feels privileged to publish studies and researches in its quarterly journal, Hippocratic Journal of Unani Medicine (HJUM).

This issue of HJUM comprises six papers. In the first paper, *Stachytarpheta jamaicensis* (L.) Vahl, a plant used in Unani System of Medicine for treatment of various ailments like ulcer, fever, rheumatic inflammation, dysentery, etc. has been discussed together with its phyto-constituents and physico-chemical aspects. The second paper is based on *Habb-e-Bawaseer Khooni*, a classical formulation used for the treatment of bleeding piles. The drug has been investigated to ensure its quality in terms of pharmacopoeial standards, high performance thin layer chromatography fingerprints and quality control parameters. The third paper discusses clinical efficacy of coded compound Unani oral formulation WM 3 Therapy which has been investigated for treatment of rheumatoid arthritis in women in post-menopausal phase at the Regional Research Institute of Unani Medicine, Srinagar. In the fourth paper, diet and its classification on the basis of primary constituents (*Arkān*) have been detailed in accordance with the philosophies and principles of Unani Medicine which considers diet as the basic sustenance of human body. Unani Medicine has always advocated diet for the first line of treatment because diseases are the result of disturbances in humors either quantitatively or qualitatively. The fifth paper is based on an explanatory study of *Ṭabī'at* and *Nafs* as natural powers of body. The last paper on the concept of *Ṣar'* (epilepsy) reviews systematically the description, classification, various causes and principle of management of *Ṣar'* (epilepsy) as considered by the physicians of the medieval period.

I am sure the papers published in this issue would be of great help to the scientists and scholars. I sincerely appreciate efforts of all the authors who have contributed papers for this issue and thank all the reviewers who spared their valuable time to scientifically scrutinize them. I encourage researchers / academicians to contribute papers for publication in this journal in more active manner.

New Delhi
December 14, 2018


Prof. Asim Ali Khan
Editor-in-Chief

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Pharmacognostical Studies of *Stachytarpheta jamaicensis* (L.) Vahl. (Whole plant)

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Abstract

S. jamaicensis is used in Indian System of Medicine and in other countries for treatment of various ailments like ulcer, fever, rheumatic inflammation, dysentery, catarrh and heart attack. This plant contains many phyto-constituents viz., tannin, saponin, flavonoids, carboxylic acid, glycoside alkaloid, phenolic acids and catechictannin. Pharmacognostic studies (quantitative and powder microscopy and fluorescence analysis) were carried out to observe stomatal number, stomatal index, veinlet number and veinlet termination number and fluorescence. The physico-chemical studies like foreign matter, loss on drying, ash and extractive values, solubility at room temperature, sugar estimation etc. were carried out. The findings of the study reveal that the plant contains negligible amount of silicates and considerable amount of inorganic materials. The findings also reveal that the plant contains mainly polar compounds soluble in alcohol and water. WHO parameters i.e. heavy metals, pesticide residue, microbial load and aflatoxins were also carried out to determine the safety and toxicity of *S. jamaicensis*.

Keywords: Macroscopy, Microscopy, Pharmacognosy, Physico-chemical parameters, *Stachytarpheta jamaicensis* (L.) Vahl.

Introduction

In traditional system of medicine herbal medicines have been used for thousand years in many parts of the world in rural areas of developing countries. (Anonymous 1993; Chitme *et al.* 2004; Kim 2005). Considering the several side effects of modern medicines, the non-toxic herbal medicines which possess lesser side effects are practiced for several years in Tibet, China, Africa, South America and Australia and looked as a better alternative for the cure (Akthar *et al.* 1992). There is a growing tendency all over the globe to shift from synthetic to nature based products of plants. *Stachytarpheta jamaicensis* (L.) Vahl., commonly called as Aaron's rod and is known as Simainayuruvi in Tamil. It belongs to the family of Verbenaceae which consists of 100 genera and 2,600 species. The plant *S. jamaicensis* is very widely spread in all plains, fields and wet places of hills of India (Gamble 1921).

The plant is being used as antacidic, analgesic, antihelmintics, anti-inflammatory, diuretic, hypotensive, laxative, lactagogue, purgative, sedative, stomachic tonic, spasmogenic, vulnerary and vermifuge (Scapoval *et al.* 1998). It is also used in ailments of allergies and respiratory disorders such as cold, flu, asthma and bronchitis and very effective in digestive problems such as indigestion, acid reflux, ulcers, constipation and dyspepsia (Taylor 2005).

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The literature on phyto-chemical studies of *S. Jamaicensis* reveals the presence of tannin, saponin and flavonoids (Idu *et al.* 2007), α -spinosterol a saturated ketone and unsaturated hydroxyl carboxylic acid (Chopra *et al.* 1956), glycosidal compound and alkaloid (Edward Ayensu 1981) and cholin, iridoid, phenolic acids, chlorogenic acids, catechictannin and flavonoids – seric, glycuronids of 6 – hydroxyl luteolol (Duret *et al.* 1976).

The present study was conducted to evaluate the pharmacognostical parameters viz macroscopy and microscopy and physico-chemical parameters viz., ash values Whole plant and extractive values, pH, LOD, tannin, sugar, detection of heavy metals, aflatoxins and pesticide residue.

Material and Methods

Plant Materials Collection

Whole plant of Stachytarpheta jamaicensis (L.) Vahl. was collected from Oragadam, Chengalpattu District forest areas, Tamil Nadu, India (Fig. 1 & 2). The plant was identified and authenticated by Prof. Dr. P. Jeyaraman, Director, Plant Anatomy Research Centre, Chennai. A voucher specimen (No. 8254) of the plant was deposited in the herbarium of Regional Research Institute of Unani Medicine, Chennai, a unit of Central Council for Research in Unani Medicine, New Delhi.

Methods

Pharmacognostic Studies

For pharmacognostical studies microtome sections were taken for general observations. Leaf clearing, quantitative microscopy for determining stomatal number, stomatal index, palisade ratio, vein islet ratio and vein termination were carried out as per the standard procedure of Sass (1940). For histochemical localisation of lignin and to measure the size of the individual cells, standard procedures of Esau (1979) and Fahn (1987) were followed.

Quantitative Microscopy

The cleared materials were washed thoroughly and stained with safranin for quantitative microscopic studies. Quantitative microscopy was done as per the standard procedures of Wallis (1985) and Evans (2001).

Maceration Study

Shade dried and coarsely powdered plant was treated with Jeffrey's reagent for a few hours. The action of the macerating fluid was stopped before the complete separation of all cells. Then the macerated tissue was carefully washed in distilled water to remove as much of the acid as possible and then transferred to 50%

alcohol for study. Slides were made by placing small quantities of cells in water on a slide. The excess water was evaporated, mounted in glycerine and observed through microscope (Evans 2001).

Fluorescence Analysis

Fluorescence analysis of drug powders and various extracts of the plant were carried out as per the standard procedures of Evans (2001), (Tables 2 and 3)

Analytical Studies

Physico-chemical parameters such as the amount of foreign matter, loss on drying at 105°C, total ash content of the sample, amount of water soluble ash, amount of acid insoluble ash, amount of water soluble extractive and alcohol soluble extractive of the sample are useful in establishing quality profile of *S. jamaicensis* and determined as per WHO guidelines (Anonymous 1998). Determination of reducing and non-reducing sugar, tannin estimation, heavy metal analysis, estimations of aflatoxin and pesticide residues were also carried out by the standard procedure for experiments (Anonymous 1997 and 1998).

Preliminary Phytochemical Tests

The qualitative phytochemical analysis of different extracts was carried out to identify the organic compounds as per Harborne (1984) and Overton (1963), (Table 9).

Results and Discussion

Pharmacognostical Studies

Habit and Distribution

The plant *S. jamaicensis* (Fig. 2) is an annual under shrub growing up to 75cm in height. Stem erect, dichotomously branched, nearly glabrous, young branches nearly quadrangular. Leaves simple, opposite decussate obovate lanceolate, 4 to 9 cm long, 2.5 to 5cm broad, glabrous both sides, margin serrate. Inflorescence long, spike up to 25 cm long and more than 4 mm thick. The flowers are bisexual, calyx four lobed, corolla five lobed, bluish violet, stamens 2 and filaments hairy. Ovary bicarpellary, syncarpous, one ovule in each carpel. Fruit 3 - 4mm long, oblong ribbed splitting into 2 pyrene (seeds).

Microscopic Features

Leaf

The transverse section of the leaf passing through the midrib is dorsiventral in nature (Fig. 3).

Midrib

The transverse section of the midrib of *S. jamaicensis* (Fig. 4) shows a short blunt conical hump collenchyma cells on the adaxial side and wide convex projection on the abaxial side. In this portion inner to the lower epidermis one or two layers are collenchymatous. The midrib is 600µm in vertical plane; the adaxial hump is 100µm in height and 150µm in breadth. The vascular strand slightly wide crescent shaped; it consists of compact radial rows of xylem elements; the xylem elements are up to 5 to 7; the cells are angular and thick walled. Phloem occurs in thin layer beneath the xylem strand. Above the main vascular strand, there is an accessory small vascular strand consisting of a few xylem elements towards the adaxial side.

Lamina

The transverse section of the lamina shows dorsiventral nature (Fig. 5 & 6). Lamina is 300µm thick; it has a wide adaxial epidermal layer of rectangular or triangular cells. The epidermal cell is about 30µm wide, the cuticle is thick and smooth. Sessile glandular trichomes with a globular head are present on adaxial epidermis. The glandular head is two celled, thin walled and has dark cell contents (Fig. 8). The gland is embedded below the level of the epidermal cells and is situated on a smaller basal cell. The gland is 50µm in height and 90µm in thickness. Uniseriatebicelled covering trichomes are also present on adaxial epidermis with a pointed and narrow and a broad rectangular basal cell. The abaxial epidermis is 20 to 25µm thick and the cells are triangular and squarish. The abaxial epidermis possess stomata (Fig. 5). The mesophyll tissue is differentiated into single layer of palisade cells below upper epidermis; the cells are narrowly cylindrical and loosely arranged and they are 150µm in height. The spongy mesophyll consists of four or five layers of large, irregular shaped cells and wide air-chambers (Fig. 6). The leaf margin is semicircular and consists of thick walled squarish cells and compact mesophyll cells (Fig. 7).

Stomata

The stomata are predominately diacytic type. There are two subsidiary cells for each stoma of which one is smaller than the other. The walls of the subsidiary cells are wavy and similar to other epidermal cells except the common walls between the subsidiary cells which are straight and at right angles to the long axis of the guard cells (Fig. 17 & 18).

Petiole

The transverse sections of the petiole is boat shaped (Fig. 9 & 10), with short, blunt lateral wings. It is 1.2mm in median vertical plane and 2 to 7 mm in horizontal

plane. The adaxial part is flat and abaxial part is semicircular. The epidermal layer is single layer cells, square shaped and thin walled. Hypodermis is in two or three layers and collenchymatous; ground tissue is parenchymatous; and the cells are circular or angular, thin walled and have small intercellular spaces (Fig. 9). The vascular system of the petiole consists of wide main vascular bundle and two small wing bundles. The main strand is boat shaped. The extreme margins of the strand pinch off into small clusters. The main bundle is 800µm wide and 200µm thick. It consists of closely aligned radial files of xylem elements and small nests of phloem elements situated along the lower part of the xylem. The wing traces are collateral with a few radial groups of xylem and a small cluster of phloem elements (Fig. 10).

Stem

The transverse sections of the stem show circular with smooth and even outline (Fig. 11, 12 & 13). The stem measuring 2.7mm thick was studied. The stem has epidermis, cortex, thin hollow vascular cylinder and wide pith (Fig. 11).

Epidermis is uniformly thin with rectangular fairly thick walled cells. The epidermis is 20µm thick. Cortex is 170µm and consists of three transitional layers of rectangular regular thin walled cells. Inner to these layers are five or six layers of circular or elliptical thin walled parenchyma cells (Fig. 12). Vascular cylinder (Fig. 13) is thin and circular. It encircles wide pith. The cylinder is 200µm thick. It consists of

- Small tangential groups of pericyclic fibres arranged in a ring in the outer periphery of the vascular cylinder.
- A thin layer of phloem where the sieve elements are distributed in isolated strands.
- A thick cylinder of xylem comprising wide, angular, thick walled vessels occurring in radial multiples and thick walled xylem fibres with wide lumen. The vessels are 40µm wide, xylem fibres are 10 - 15µm wide.
- Pith is wide measuring 1.7 mm in diameter. The pith cells are wide, polygonal, thin walled and compact. No cell inclusions are evident in the pith cells.

Root

The transverse sections of the tap root and lateral roots are presented in (Fig. 14, 15 & 16).

Lateral Root

The lateral root of 500µm thick has dark uneven outline and disintegrated epidermal cells. Cortex has three or four layers of wide thin walled, compact cells.

The vascular cylinder consists of solid central cylinder of xylem surrounded by a layer of phloem on its outer side (Fig. 14). The xylem elements are with wide lumen and very thick walls. The vascular cylinder is 150µm wide.

Tap Root

The tap root is nearly 1mm thick. Transverse section is circular in outline; the rhizodermis is thin with narrowly rectangular cells (Fig. 15). The exodermis is wide and dilated and the cells are rectangular in shape. The cortex has a single whorl of wide, rectangular air-chambers separated from each other by thin radial filaments of narrow cells (parenchyma). The air-chambers are 80 x 200µm in size. Secondary phloem is fairly wide and continuous comprising narrow sieve elements and wide parenchyma cells. The phloem zone is 50µm wide. The xylem cylinder is circular and dense comprising wide prominent vessels and xylem fibres. Vessels are narrow in the centre and become wider and widest towards the periphery. They are circular or elliptic and thick walled. The narrow vessels are 40µm wide and larger vessels are 100 µm wide. The xylem fibres are thick walled and lignified and have wide lumen (Fig. 16).

Leaf Venation

The lateral primary and secondary veins are uniformly thin and straight. The vein ending towards the leaf margins are interconnected by a vertically running intra marginal vein. The vein-islets are wide and distinct; they are rectangular, squarish or polygonal (Fig. 21 & 22). The vein terminations are long, slender, either simple or forked once. The leaf margin has short, stumpy pointed trichomes. They have broad base and terminal part is directed forward. The trichome is 150 µm long and 50 µm wide at the base (Fig. 23). In surface view of the closed leaf, the glandular trichomes are seen. They are broadly rectangular and two celled. Their walls are thin and the cells have dense content (Fig. 24).

Maceration Study

Microscopy of the macerated plant revealed the presence of the following elements:

Fibres

The fibres are abundant in the powder which is narrow, elongated, spindle shaped and pointed at the tip. They possess thick lignified walls; lateral wall pits are not evident. The fibres are up to 600 to 800µm long and 20µm wide (Fig. 25 & 26).

Vessel Elements

Vessel elements are equally abundant. They are long and cylindrical. The length of the elements ranges from 500 to 600µm and width is 40µm. The vessel elements are simple, circular with oblique end wall perforations. The vessel elements may have short pointed tails (Fig. 25, 27 & 28). The lateral walls have circular, alternate bordered pits. Some of the vessel elements show spiral thickening (Fig. 29).

Xylem Parenchyma

Parenchyma cells mixed with the fibres and vessels are sparsely seen in the powder. The parenchyma cells possess thin walls. They are cubical to rectangular in shape. Some of the parenchyma cells show circular simple pits (Fig. 28).

Trichomes

The trichomes are uniseriate and bicellular. The terminal cells are pointed and narrow whereas the basal cells are broad and rectangular (Fig. 30).

Stomata

The stomata are diacytic type (Fig. 31).

Quantitative Microscopy

Quantitative microscopy such as stomatal number, stomatal index, vein islet number and veinlet termination number are given in Table 1. The mean value of stomatal number (adaxial and abaxial epidermis) and stomatal index (adaxial and abaxial epidermis) are found, as 67.5 and 143 and 24.28 and 31.46 respectively. The values show that stomatal number is comparatively more on abaxial epidermis. Vein islet number, veinlet termination number and palisade ratio were found as 7, 10 and 6.15 respectively.

Fluorescence Analysis

This technique was utilized for the observation of fluorescence produced by a compound in ultraviolet light for qualitative evaluation of phytochemicals. The ultra light is very active in producing fluorescence in many substances which do not visibly fluoresce in day light. Fluorescence analysis of drug powders and various extracts of the powder were studied and observations are shown in Tables 2 and 3. In Table 2, fluorescence analysis of powder *S. jamaicensis* shows that at day

light (Light green), 254nm (green) and 366nm (brown); aqueous alkali solution of the powder at day light (blackish brown), 254nm (black) and 366nm (dark violet); alcoholic alkali solution of the powder at day light shows (blackish green), 254nm (brownish green) and 366nm (Dark brown); 1N HCl solution of the powder at day light shows (brownish yellow), 254nm (green) and 366nm (blackish green) and 50% HNO₃ solution of the powder at day light shows (Orange), 254nm (green) and 366nm (light pink).

Table 3 shows the fluorescence analysis of various extracts of *S. jamaicensis* viz n-hexane at day light shows (yellowish green), 254nm (green) and 366nm (light pink); benzene at day light shows (pale yellow), 254nm (green) and 366nm (brown); chloroform at day light shows (dark green), 254nm (greenish violet) and 366nm (brownish red); alcohol at day light shows (dark green), 254nm (dark green) and 366nm (dark brown); water at day light shows (reddish brown), 254nm (blackish green) and 366nm (dark brown) and acetone at day light shows (dark green), 254nm (greenish yellow) and 366nm (brownish red).

Analytical Studies

Physico-chemical Parameters

The physico-chemical standards for the dry powder of the whole plant (80mesh) are given in Table 4. The plant contains negligible amount of silicates; shown by the acid insoluble ash (0.72%) but contains considerable amount of inorganic materials; shown by the higher ash value (7.91%). The extractive values with different solvents viz. n-hexane 1.53%, chloroform 2.50% and ethanol 3.90% showed that the plant contains mainly the polar compounds which are soluble in alcohol and water as the solubility in ethanol is 4.51% and in water is 13.87% respectively which are higher as compared to the values in n-hexane and chloroform. The plant contains more of reducing sugar (4.5%) than non-reducing sugar (1.78%). It contains considerable amount of tannin 1.76% and can be utilized in leather tanning.

Microbial Load Analysis

The microbial load and pathogens studies are shown in Table 5.

Heavy Metal Analysis

The medicinal plants materials are generally contaminated with arsenic and heavy metals due to environmental pollution. These components even in trace amounts are dangerous and can damage the important human organs such as kidney, liver and heart (Mukherjee 2008). The amount of various heavy metals found in the plant material is given in Table 6. The heavy metal contents viz. lead, cadmium, mercury and arsenic as per WHO guidelines were found within

the permissible limits viz. 10, 0.3, 1 and 3 ppm respectively. The plant is hence considered non-pollutant in the environment and it cannot cause any illness.

Analysis of Aflatoxins

The aflatoxin can be acute toxic, carcinogenic, mutagenic, teratogenic and immunosuppressive to the human being if these are found in the plant above the prescribed limits (Felix D'Mello 1997). The various aflatoxins found in the plant material are given in Table 7. The aflatoxins B1, B2, G1 and G2 were found below the detecting limit and the toxic effect of the plant may be considered as nil and hence, the plant is safe for use.

Analysis of Pesticide Residues

The various pesticidal residues of the plant such as α - HCH, β - HCH, γ - HCH, δ -HCH, op-DDT, pp-DDT, op-DDE, α - Endosulfan, β – Endosulfan, op-DDD and pp-DDD were tested and found nil. The results are shown in Table 8. The plant may be considered as pesticide resistant and such plants are quite safe for grazing animals and subsequently humans. The general physico-chemical parameters such as ash values and extractive values will be useful in standardisation of the crude drug. The quantitative estimation of sugar and tannin will also serve as useful standards. The estimation of heavy metals and analysis of aflatoxins and pesticidal residues will be useful from the toxicity point of view and serve as safety standards.

Conclusion

This study has provided a scientific evaluation for *Stachytarpheta jamaicensis* (L.) Vahl. on pharmacognostic and physico-chemical standards. The study on physico-chemical parameters and results of analysis of heavy metals, microbial load, aflatoxins and pesticide residue provide a quality standard for further reference and helps distinguish the original drug from the spurious ones.

Table 1: Quantitative Microscopy of *S. jamaicensis*- Whole Plant

S. No.	Parameters Analysed	Observations	
		Range	Mean
1	Stomatal Number – Adaxial epidermis	63 – 72 / sq. mm.	67.5
	Stomatal Number – Abaxial epidermis	138 – 148 / sq. mm.	143
2	Stomatal Index – Adaxial epidermis	24.28	--
	Stomatal Index – Abaxial epidermis	31.46	--
3	Vein islet number	6.5 – 7.5 / sq. mm.	7
4	Veinlet termination number	9 – 11 / sq. mm.	10
5	Palisade ratio	5.5 – 6.8	6.15

Table 2: Fluorescence Analysis of Powder of *S. jamaicensis*- Whole Plant

S. No.	Treatment	Day light	UV light	
			254nm	366nm
1	Powder	Light green	Green	Brown
2	Powder + 1N NaOH (Aq)	Blackish brown	Black	Dark violet
3	Powder + 1N NaOH (Al)	Blackish green	Brownish green	Dark brown
4	Powder + 1N HCl	Brownish yellow	Green	Blackish green
5	Powder + 50% HNO ₃	Orange	Green	Light pink

Table 3: Fluorescence Analysis of Extract of *S. jamaicensis*- Whole Plant

S. No.	Treatment	Day light	UV light	
			254nm	366nm
1	Hexane	Yellowish green	Green	Light pink
2	Benzene	Pale yellow	Green	Brown
3	Chloroform	Dark green	Greenish violet	Brownish red
4	Alcohol	Dark green	Dark green	Dark brown
5	Water	Reddish brown	Blackish green	Dark brown
6	Acetone	Dark green	Greenish yellow	Brownish red

Table 4: Physico-chemical Analysis of *S. jamaicensis*- Whole Plant

Sl. No	Parameters	Results in % (n = 3)
1.	% Foreign matter	0.84
2.	% Loss on drying at 105°C	10.27
3.	% Ash	7.91
4.	% Water soluble ash	2.39
5.	% Acid insoluble ash	0.72
6.	% Extractive values: a. n-hexane b. Chloroform c. Ethanol	1.53 2.50 3.90
7.	% Solubility at room temp. a. Ethanol b. Water	4.51 13.87
8.	Sugar estimation a. Reducing sugar b. Non-reducing sugar	4.45 1.78
9.	% Tannin	1.76
10.	PH values (1% aqueous solution)	4.90

Table 5: Analysis of Microbial Load of the Whole Plant *S. jamaicensis*

S. No.	Parameter Analyzed	Results	WHO Limit
1	Total Bacterial Count	200 cfu/gm	105cfu/gm
2	Total Fungal Count	100 cfu/gm	103cfu/gm
3	<i>Escherichia coli</i>	Absent	Absent
4	<i>Salmonella typhai</i> Spp.	Absent	Absent
5	<i>Staphylococcus aureus</i>	Absent	Absent

Table 6: Heavy Metal Analysis of the Whole Plant *S. jamaicensis*

S. No	Name of the Elements	S. jamaicensis (ppm)	Permissible Limits (API, 2008) (ppm)
1.	Lead	0.0511	10
2.	Cadmium	0.0170	0.3
3.	Mercury	Nil	1
4.	Arsenic	0.0030	3

ppm : parts per million

Table 7: Analysis of Aflatoxins of the Whole Plant *S. jamaicensis*

Aflatoxins	Results
B ₁	BDL (DL: 1.0 ppb)
B ₂	BDL (DL 0.5 ppb)
G ₁	BDL (DL 1.0 ppb)
G ₂	BDL (DL 0.5 ppb)

BDL: Below Detectable Limit DL: Detectable Limit ppb: Parts per billion

Table 8: Analysis of Pesticidal Residues of the Whole Plant *S. jamaicensis*

Pesticides	ppm
α – HCH	ND
β - HCH	ND
γ – HCH	ND
δ –HCH	ND
<i>op</i> -DDT	ND
<i>pp</i> -DDT	ND
<i>op</i> -DDE	ND
α - Endosulfan	ND
β - Endosulfan	ND
<i>op</i> -DDD	ND
<i>pp</i> -DDD	ND

Detection limit - 0.01 ppm; ppm : parts per million; ND: Not detectable

Table 9: Preliminary Phytochemical Tests of the *S. jamaicensis*

S. No	Test	n-hexane	Chloroform	Ethanol
1.	Alkaloid	-	-	+
2.	Amino acid	-	-	+
3.	Coumarin	-	+	+
4.	Flavone	-	+	+
5.	Glycoside/ Sugar	-	-	+
6.	Phenol	-	+	+
7.	Quinone	-	-	-
8.	Steroid	+	+	-
9.	Tannin	-	-	+
10.	Triterpenoid	+	+	-
11.	Carboxylic acid	-	-	-
12.	Furanoid	-	-	-
13.	Saponin	-	-	+
	+ = Positive		- = Negative	



Fig. 1: *S. jamaicensis*-Habit



Fig. 2: Single plant

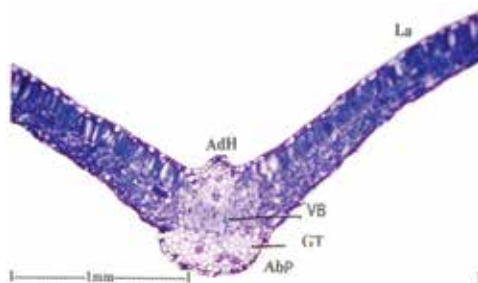


Fig. 3: T. S. of leaf through midrib with lamina

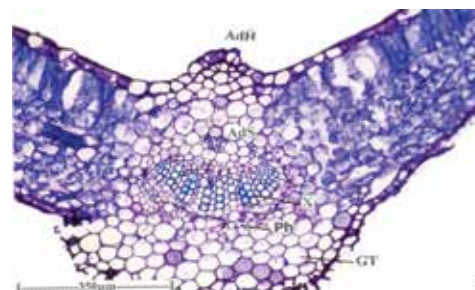


Fig. 4: Midrib with lamina enlarged

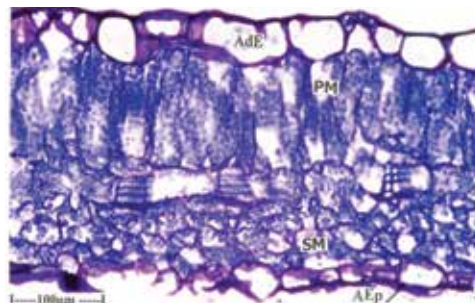


Fig. 5: T. S. of lamina

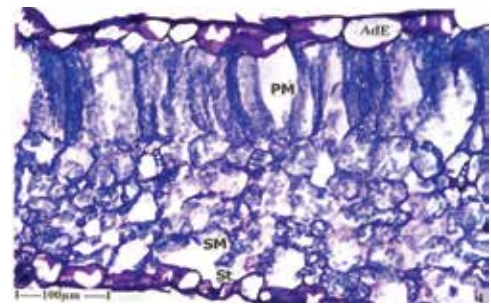


Fig. 6: T. S. of lamina magnified

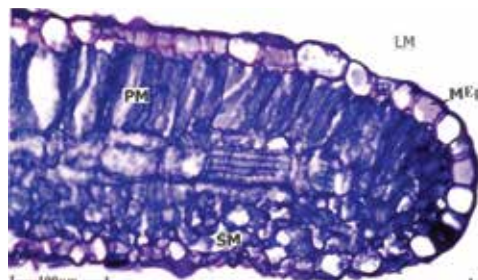


Fig. 7: T. S. of leaf margin

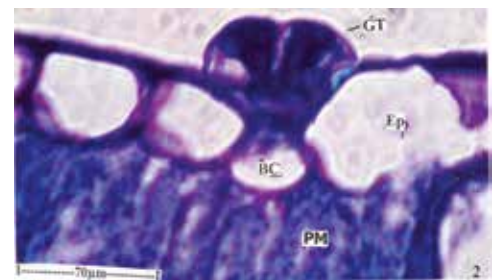


Fig. 8: T. S. of leaf showing glandular trichome on the adaxial side

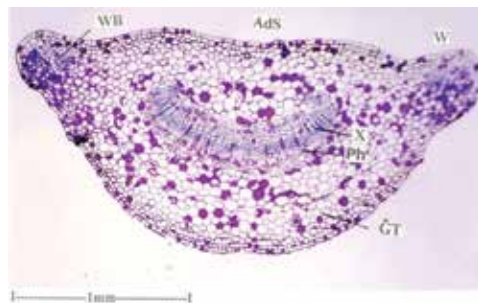


Fig. 9: T. S. of petiole – Ground plan

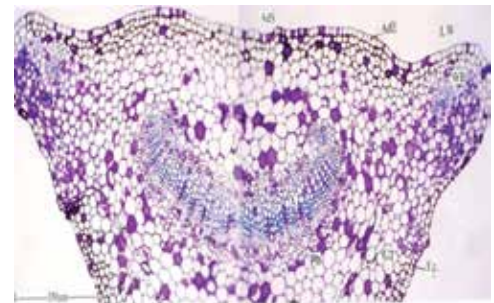


Fig. 10: Structure of the petiole

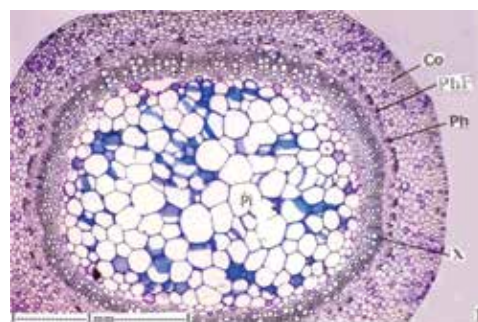


Fig. 11: T. S. of stem – Ground plan

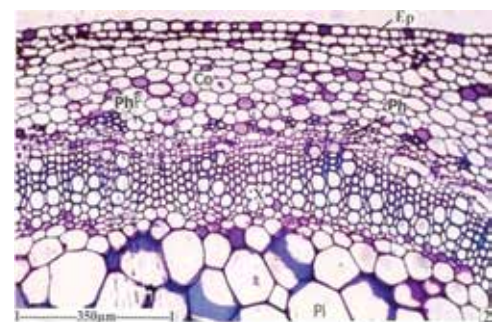


Fig. 12: T. S. of stem – A portion magnified

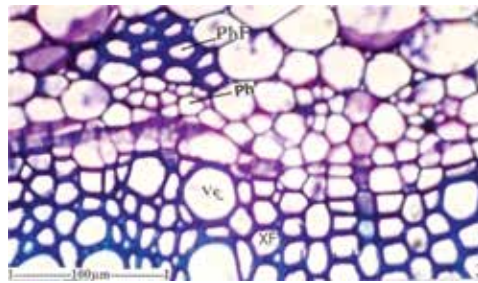


Fig.13: Xylem and phloem enlarged

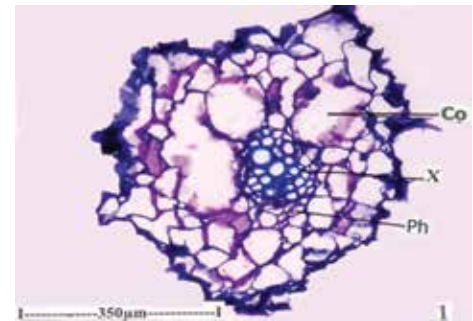


Fig.14: T. S. of lateral root – Entire view

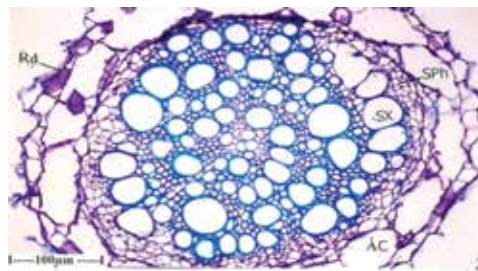


Fig. 15: T. S. of tap root – Ground plan

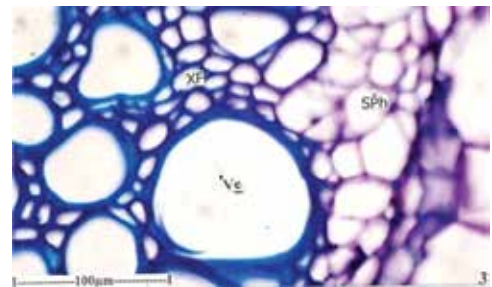


Fig. 16: T. S. of tap root showing secondary phloem and secondary xylem

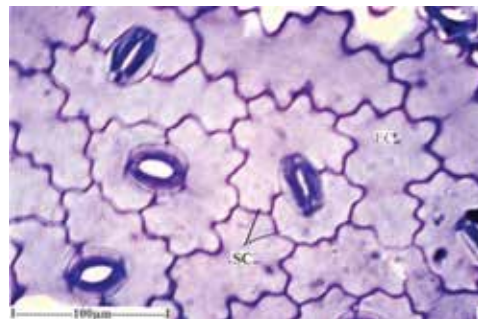


Fig. 17: A view of Stomatal and Epidermal cells morphology

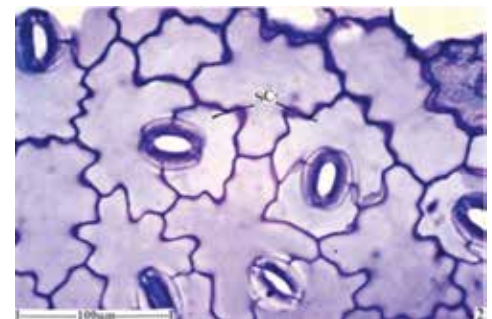


Fig. 18: A view of Stomatal and Epidermal cells morphology

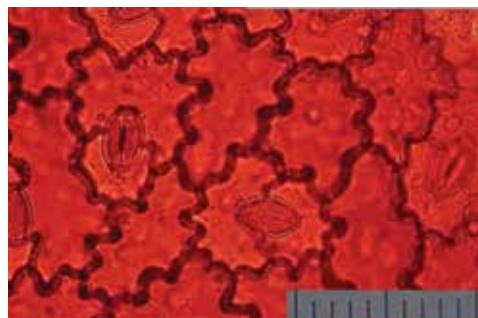


Fig.19: Adaxial epidermis with stomata

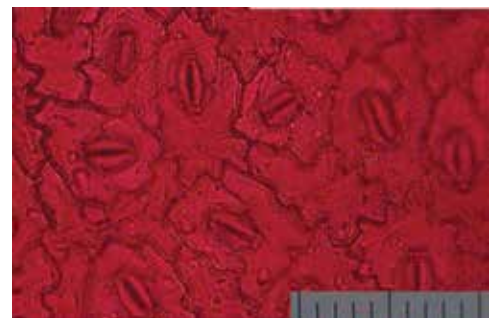


Fig. 20: Abaxial epidermis with stomata

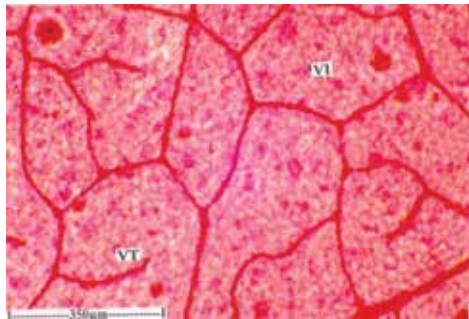


Fig. 21: Cleared leaf showing vein-islet and vein termination

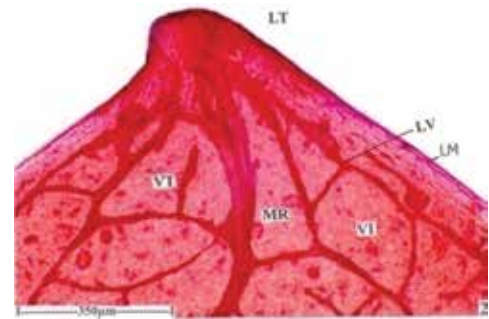


Fig. 22: Leaf tip showing venation patterns with stomata

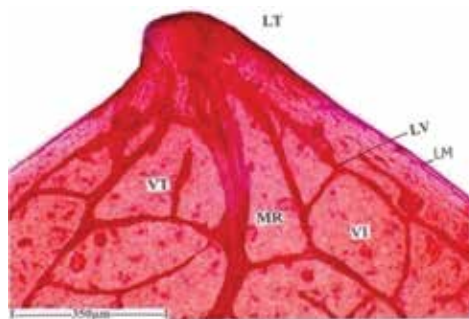


Fig. 23: Leaf margin showing intra-marginal venation marginal trichomes

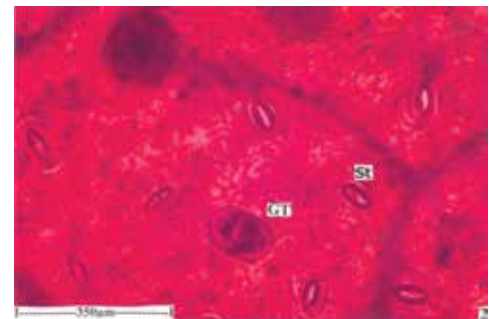


Fig. 24: Surface view of stomata and glandular trichomes

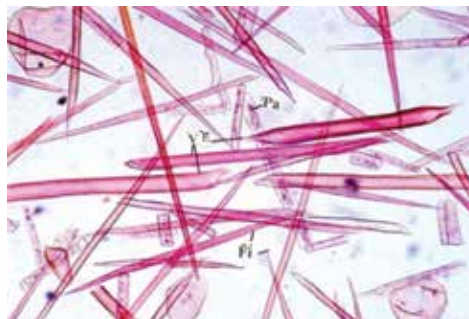


Fig. 25: Scattered elements of fibres, vessels and parenchyma in the macerated material

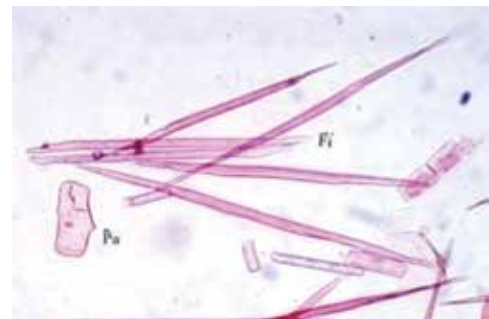


Fig. 26: Spindle shaped fibres



Fig. 27: Short pointed vessel elements

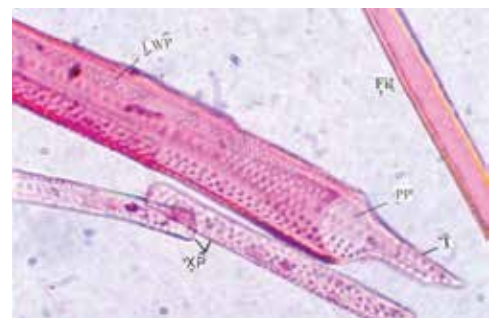


Fig. 28: Long and pointed cylindrical elements



Fig. 29: Spiral vessel



Fig. 30: Trichome

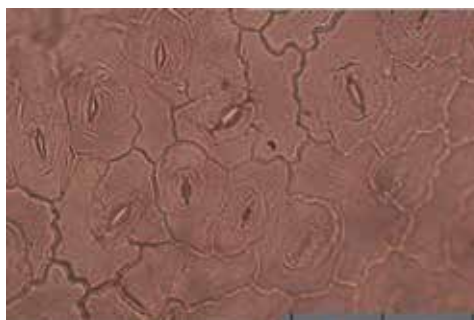


Fig. 31: Epidermal cells in surface view with stomata

Acknowledgement

The authors are thankful to the Director General, Central Council for Research in Unani Medicine, New Delhi, for his valuable guidance, encouragement as well as for providing necessary facilities to carry out the study.

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सारांश

स्टेकाइटरफेटा जैमिसेन्सिस (एल.) वाह्ल. (सम्पूर्ण पादप) का फार्माकोग्नॉस्टिक अध्ययन

¹*रामप्रताप मीना, ²एस. मागेश्वरी, ³भीरा देवी श्री पी और ⁴सदफ़ सुभानी

एस. जैमिसेन्सिस का उपयोग भारतीय चिकित्सा पद्धति और अन्य देशों में विभिन्न रोगों जैसे अल्सर, बुखार, संघिशोथ सूजन, पेचिश, जुकाम और दिल के दौरों के उपचार के लिए किया जाता है। इस पादप में विभिन्न पादप-घटक जैसे टैनिन, सैपोनिन, फ्लेवोनाईड्स, कार्बोक्जिलिक एसिड, ग्लाइकोसाइड, एलकेलॉइड, फिनोलिक एसिड्स और कैटेचिकटैनिन पाये जाते हैं। स्टोमेटल नम्बर, स्टोमेटल इन्डेक्स, वीनलेट नम्बर और वीनलेट टर्मिनेशन नम्बर और फ्लोरिसेन्स का अवलोकन करने के लिए फार्माकोग्नॉस्टिक अध्ययन (मात्रात्मक और पाउडर माइक्रोस्कोपी और फ्लोरोसेंस विश्लेषण) किया गया। फोरन मेटर, लॉस आन ड्राइंग, ऐश एवं एक्सट्रैक्टिव वेल्यूस्, कमरे के तापमान पर घुलनशीलता, शुगर एस्टीमेशन इत्यादि का भौतिक-रासायनिक अध्ययन किया गया। इस अध्ययन से यह ज्ञात हुआ कि इस पौधे में सिलिकेट्स की नगण्य मात्रा और अकार्बनिक तत्वों की काफी मात्रा होती है। यह भी ज्ञात हुआ कि इस पौधे में मुख्यतः एल्कोहल तथा पानी में घुलनशील पोलर यौगिक पाये जाते हैं। एस. जैमिसेन्सिस विषाक्तता एवं सुरक्षिता का निश्चय करने के लिए डब्ल्यू.एच.ओ. मानक जैसे हेवी मेटल्स, पेस्टीसाइड रेसीड्यू, माइक्रोबियल लोड और एपलाटोक्सिन भी किये गये।

शब्द कुंजी — मैक्रोस्कोपी, सूक्ष्मदर्शिता, फार्माकोग्नोसी भौतिक-रासायनिक मानदण्ड, स्टेकाइटरफेटा, जैमिसेन्सिस



Standardization and HPTLC Fingerprinting Study of Polyherbal Unani Formulation - Habb-e-Bawaseer Khooni

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Abstract

Drug standardization is the best modern technique to describe all the measures of drug such as manufacturing process (Standard Operating Procedures) and quality assurance. Most of the traditional and alternative medicines are effective but they lack due to the non-availability of scientific standards. So, there is a need to develop a standard technique to standardize and validate herbal formulations.

The drug Habb-e-Bawaseer Khooni is therapeutically useful in the treatment of Bawaseer Khooni (Bleeding piles). It was prepared in three different batches as per the method mentioned in National Formulary of Unani Medicine (Part-VI). In order to ascertain the quality of drug, the present study was conducted to evaluate pharmacopoeial standards, High Performance Thin Layer Chromatography fingerprints and quality control parameters. The physico-chemical data showed that the drug contains loss on drying/moisture (2.33%), total ash (7.71%), acid insoluble ash (4.33%), alcohol soluble extractive (20.39%), water soluble extractive (23.10%), pH of 1% aq. solution (5.59), pH of 10% aq. solution (5.66), alcohol successive extractive (16.13%), chloroform successive extractive (7.86%) and bulk density of granules (0.546). High Performance Thin Layer Chromatography fingerprints showed various spots at 254nm, 366nm and visible light (Vanillin sulphuric acid reagent). The study revealed the absence of microbial load, aflatoxins, heavy metal and pesticide residues. The data will be very useful for laying down the pharmacopoeial standards of Habb-e-Bawaseer Khooni as well as for providing quality medicines to the needy.

Keywords: Habb-e-Bawaseer Khooni, Physico-chemical, Quality control, Safety parameters

Introduction

Standardization of ASU herbal drugs is not an easy task because various factors influence their bio-efficacy and reproducible therapeutic effects. In order to obtain quality assured herbal products, pharmaco-vigilance care should be taken for proper identification of plants, season and area of collection, grading, drying, extraction, purification process and rationalizing the combination in case of poly-herbal drugs (Saxena and Yadav;1983; Patel *et al.*, 2006),

There are many contradictory theories on the subject of herbal medicine and its relationship with human physiology and mental function (Yadav *et al.*, 2011). Since ancient time herbal medicines have played a significant role in the management of both minor and major medical illness (Bahuguna *et al.*,2014). The quality assurance of crude drugs and herbal formulated products is important in justifying their acceptability in modern system of medicine. Hence, there is a need to conduct studies on drugs standardization to provide effective, curable and safe drugs to the needy mass suffering from various diseases. The drug Habb-e-Bawaseer

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Khooni is one of the classical Unani poly-herbal compound formulations which is therapeutically useful in the treatment of Bawaseer Khooni (Bleeding piles). As per the Unani literature, the actions of drug are Mulayyin (Laxative), Habis (Retentive) and its therapeutic uses are for treating Bawaseer Khooni (Bleeding piles), Qabz (Constipation) etc. The organoleptic characters of the drug are dark brown coloured pills with agreeable aromatic odour and pungent taste (Anonymous, 2011).

Material and Methods

Drug Preparation

The formulated drug was prepared in different batches in a laboratory scale as per the ingredients compositions and methods given in NFUM-VI (Anonymous, 2011). The required quantities of all the ingredients taken were of pharmacopoeial quality. All the ingredients were cleaned, dried, powdered and sieved through 100 mesh and kept separately. The powders of all ingredients were mixed thoroughly. Then Araq-e-Gulab was added with mixed powders thoroughly and lubdi mass was prepared. Lubdi mass was converted into sticks of required size, thickness and cut into small pieces using a knife and huboobs of required size were prepared mechanically. Dried the Huboob and stored in a tightly closed glass container.

Pharmacopoeial Standards

Pharmacopoeial research studies such as organoleptic characters, microscopical, macro-scopical and physico-chemical, HPTLC and quality control parameters were carried out.

Organoleptic Evaluation

Organoleptic evaluation refers to evaluation of formulation by colour, odour, taste, texture etc., using the sensory organs of our body. The organoleptic characters of the drug samples were studied based on standard methods (Siddique 1995).

High Performance Thin Layer Chromatography Fingerprinting Analysis (HPTLC)

The drug samples (2g) were soaked in chloroform and alcohol separately for 18 hours and refluxed for 10 minutes on water bath and filtered through Whatman No.1 filter paper. The filtrates were concentrates and made up to 10ml in volumetric flask with respective solvents (Saxena and Yadav, 1983). HPTLC analysis was carried out as per the standard method of Wagner and Bladt; (1996).

Physico-chemical Analysis

The moisture content of the powdered sample at 105°C, ash values, acid insoluble ash, solubility in water and alcohol, pH values and bulk density etc., are useful tools in the standardization of herbal products and they were studied as per the standard method (Anonymous, 1987).

Safety Parameters

The microbial load and heavy metal parameters were carried out as per the WHO guidelines (Anonymous, 1998). Aflatoxins were estimated by Kobra cell techniques using Agilent HPLC instruments as per ASTA method (Anonymous, 1997). The heavy metals were analyzed by Atomic Absorption Spectroscopy (Anonymous, 2005) and pesticide residues were analyzed using GC-MS Agilent instruments equipped with Mass selective detector as per AOAC method (Anonymous, 2005).

Results and Discussion

Organoleptic character of the drug indicates that the drug is dark brown in colour with aromatic odour and pungent taste. The physico-chemical analysis such as LOD obtained in the drug was 2.33% which shows the amount of moisture content present in the drug. The alcohol soluble extractive was (20.39%) and water soluble extractive was (23.10%) which might be due to the presence of polar organic bio-active chemical constituents and inorganic constituents respectively. Total ash (7.71%) and acid in-soluble (4.33%) indicate the presence of inorganic materials. The pH of 1% & 10% aq. solution was obtained (5.59 & 5.66 respectively). The successive extractive matter in alcohol and chloroform was 16.13% and 7.86% respectively. The analysed parameters of the drug are shown in Table 1.

High Performance Thin Layer Chromatography

HPTLC fingerprinting was performed on 10 cm × 10 cm TLC plates pre-coated with 0.25 µm thin layers of silica gel 60 F254 (E. Merck). The chloroform extract of the sample was applied on the plates as bands 10 mm wide. Linear ascending development to a distance of 80 mm with Toluene: Ethyl acetate: Formic acid (8.5: 1.5: 0.2) as mobile phase was performed in a twin-trough glass chamber (20 cm × 10cm) previously saturated with vapours of mobile phase for 20 minutes. The plate was air dried and visualized under λ 254 nm, and showed major 9 spots at R_f 0.82, 0.61, 0.53, 0.28, 0.25, 0.22, 0.18, 0.15 and 0.10 (Black) and under λ 366nm it showed major 21 spots at R_f 0.88 (Red), 0.85 (Violet), 0.79 (Red), 0.76 (Violet), 0.69 (Red), 0.66 (Pink), 0.64 (Red), 0.61 (Brown), 0.58 (Blue), 0.52 (Pink), 0.50, 0.48 (Red), 0.45 (Violet), 0.41, 0.36 (Brown), 0.32 (Violet), 0.30 (Dark brown), 0.28 (Grey), 0.26 (Brown), 0.19 (Violet) and 0.10 (Light grey). Further, the same TLC plate was derivatized with vanillin -sulphuric acid reagent and visualized in white light and showed major 14 spots at R_f 0.88, 0.79 (Grey), 0.75 (Violet), 0.71 (Grey), 0.68 (Blue), 0.61 (Grey), 0.59 (Violet), 0.54, 0.50, 0.48 (Dark blue), 0.35 (Grey), 0.31 (Violet), 0.23 and 0.15 (Grey) (Fig.-1, 2, 3 and Table 2).

Similarly, the alcohol extract was applied on TLC plate and developed using Toluene: Ethyl acetate (8.5:1.5) as mobile phase. After development the plate was air dried and visualized under λ 254 nm and showed major 9 spots at R_f 0.72, 0.61, 0.51, 0.49 (Green), 0.40, 0.31, 0.28, 0.19 and 0.15 (Dark green) and under λ 366nm, it showed 16 major spots at R_f 0.75, 0.65 (Brown), 0.60 (Blue), 0.57, 0.54, 0.49 (Red), 0.47 (Blue), 0.44 (Pink), 0.41 (Violet), 0.39 (Red),

0.29 (Pink), 0.27 (Blue), 0.23 (Grey), 0.21 (Yellow), 0.19 (Blue) and 0.17 (Grey). Further, the same TLC plate was derivatized with vanillin -sulphuric acid reagent and visualized in white light and showed major 14 spots at R_f 0.89 (Dark grey), 0.77 (Dark blue), 0.72, 0.67, 0.61, 0.51, 0.48 (Grey), 0.41 (Dark blue), 0.35, 0.33 (Grey), 0.25 (Violet), 0.24 (Dark blue), 0.21 (Grey) and 0.15 (Dark green) (Fig.4,5,6 and Table 3).

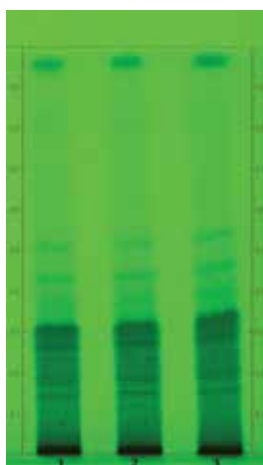
Table 1: Physico-Chemical Parameters

Parameters Analyzed	Batch Numbers		
	I	II	III
Extractives (%w/w)			
Alcohol soluble	20.38	20.41	20.38
Water soluble	23.09	23.12	23.09
Ash values (%w/w)			
Total ash	7.70	7.70	7.70
Acid insoluble ash	4.32	4.32	4.32
pH values			
1% Aq. solution	5.58	5.60	5.60
10% Aq. Solution	5.66	5.67	5.67
LOD./ Moisture content (%w/w)	2.32	2.34	2.33
Alcohol successive extractive (%w/w)	16.81	16.80	14.80
Chloroform successive extractive (%w/w)	7.85	7.86	7.87
Bulk density (w/w)	0.5492	0.5413	0.5498

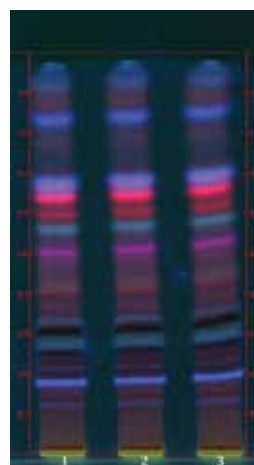
Table 2: R_f Values of Chloroform Extract

Solvent system	R_f Values		
	254nm	366nm	After Derivatization
Toluene : Ethyl acetate : Formic acid (8.5 :1.5 :0.2)	0.82(Green)	0.88(Red)	0.88(Grey)
	0.61(Green)	0.85(Violet)	0.79(Grey)
	0.53(Green)	0.79(Red)	0.75(Violet)
	0.28(Green)	0.76(Violet)	0.719(Grey)
	0.25(Green)	0.69(Red)	0.68(Blue)
	0.22(Green)	0.66(Pink)	0.61(Grey)
	0.18(Green)	0.64(Red)	0.59(Violet)
	0.15(Green)	0.61(Brown)	0.54(Dark blue)
	0.10(Green)	0.58(Blue)	0.50(Dark blue)
		0.52(Pink)	0.48(Dark blue)
		0.50(Red)	0.35(Grey)
		0.48(Red)	0.31(Violet)
		0.45(Violet)	0.23(Grey)
		0.41(Brown)	0.15(Grey)
		0.36(Brown)	
		0.32(Violet)	
		0.30(Dark brown)	
		0.28(Grey)	

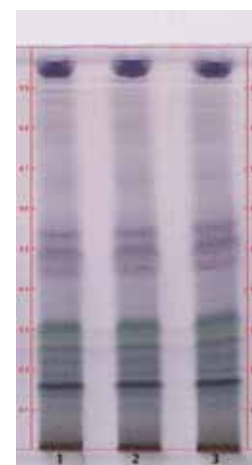
Solvent system	<i>R_f</i> Values		
	254nm	366nm	After Derivatization
Toluene : Ethyl acetate : Formic acid (8.5 :1.5 :0.2)		0.26(Brown)	
		0.19(Violet)	
		0.10(Light grey)	



UV - 254nm



UV - 366nm



After Derivatization

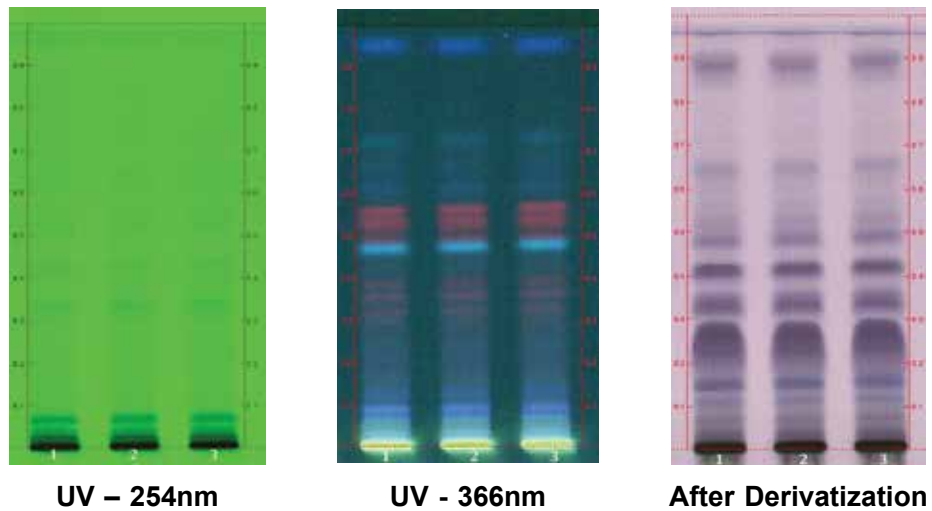
Solvent System: Toluene :Ethyl acetate :Formic acid (8.5 :1.5 : 0.2)

Track 1. Batch - I; Track 2. Batch - II; Track 3. Batch – III

Fig. 1: HPTLC Photo of Chloroformed Extract

Table 3: *R_f* Values of Alcohol Extract

Solvent system	<i>R_f</i> Values		
	254nm	366nm	After Derivatization
Toluene : Ethyl acetate (8.5:1.5)	0.72(Green)	0.75(Brown)	0.89(Dark grey)
	0.61(Green)	0.65(Brown)	0.77(Dark blue)
	0.51(Green)	0.60(Blue)	0.72(Grey)
	0.49(Green)	0.57(Red)	0.67(Grey)
	0.40(Dark green)	0.54(Red)	0.61(Grey)
	0.31(Dark green)	0.49(Red)	0.51(Grey)
	0.28(Dark green)	0.47(Blue)	0.48(Grey)
	0.19(Dark green)	0.44(Pink)	0.41(Blue)
	0.15(Dark green)	0.41(Violet)	0.35(Grey)
		0.39(Red)	0.33(Grey)
		0.29(Pink)	0.25(Violet)
		0.27(Blue)	0.24(Dark blue)
		0.23(Gray)	0.21(Grey)
		0.21(Yellow)	0.15(Dark green)
		0.19(Blue)	
		0.17(Grey)	



Solvent System: Toluene :Ethyl acetate (8.5:1.5)
Track 1. Batch I; Track 2. Batch II; Track 3. Batch III
Fig. 2: HPTLC Photo of Alcohol Extract

Safety Parameters

The analysis of microbial load present in the drug showed that the total bacterial count (TBC) and total fungal count (TFC) were 400 and 100 cfu/gm respectively and the detection of microbial load was found under permissible limits of WHO guideline (Table 4).

Table 4: Analysis of Microbial Load

S. No.	Parameter Analyzed	Results	WHO Limit
1	Total Bacterial Count	400 cfu/gm	105cfu/gm
2	Total Fungal Count	100 cfu/gm	103cfu/gm
3	<i>Escherichia coli</i>	Absent	Absent
4	<i>Salmonella typhai Spp.</i>	Absent	Absent
5	<i>Staphylococcus aureus</i>	Absent	Absent

Table 5: Estimation of Heavy Metal

S. No.	Parameter Analyzed	Results	WHO Limit
1	Lead	5.30ppm	10ppm
2	Cadmium	Not detected	0.3ppm
3	Mercury	Not detected	1.0ppm
4	Arsenic	0.32 ppm	3.0ppm

Table 6: Estimation of Aflatoxins

S. No.	Parameter Analyzed	Results	WHO Limit
1	B1	Not detected	0.5ppm
2	B2	Not detected	0.1ppm
3	G1	Not detected	0.5ppm
4	G2	Not detected	0.1ppm

Table 7: Estimation of Pesticide Residues

S. No.	Parameter Analyzed	Results	WHO Limit (mg/kg)
1	DDT (all isomers, sum of p, p'-DDT, α, p' DDT, p, p'-DDE and p, p'-TDE (DDD expressed as DDT)	Not detected	1.0
2	HCH (sum of all isomers)	Not detected	0.3
3	Endosulphan (all isomers)	Not detected	3.0
4	Azinphos-methyl	Not detected	1.0
5	Alachlor	Not detected	0.02
6	Aldrin (Aldrin and dieldrin combined expressed as dieldrin)	Not detected	0.05
7	Chlordane (cis& tans)	Not detected	0.05
8	Chlorfenvinphos	Not detected	0.5
9	Heptachlor (sum of heptachlor and heptachlor epoxide expressed as heptachlor)	Not detected	0.05
10	Endrin	Not detected	0.05
11	Ethion	Not detected	2.0
12	Chlorpyrifos	Not detected	0.2
13	Chlorpyrifos-methyl	Not detected	0.1
14	Parathion methyl	Not detected	0.2
15	Malathion	Not detected	1.0
16	Parathion	Not detected	0.5
17	Diazinon	Not detected	0.5
18	Dichlorvos	Not detected	1.0
19	Methidathion	Not detected	0.2
20	Phosalone	Not detected	0.1
21	Fenvalerate	Not detected	1.5
22	Cypermethrin(including other mixtures of constituent isomers sum of isomers)	Not detected	1.0
23	Fenitrothion	Not detected	0.5
24	Deltamethrin	Not detected	0.5
25	Permethrin(sum of isomers)	Not detected	1.0
26	Pirimiphos methyl	Not detected	4,0

Conclusion

In the present study various parameters such as physico-chemical, HPTLC finger print and WHO parameters were carried out and can be laid down as reference standards of the drug Habb-e-Bawaseer Khooni. From the study, it can be concluded that the formulation Habb-e-Bawaseer Khooni is safe and free from any toxic, hazardous substance.

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सारांश

पॉलीहर्बल यूनानी मिश्रण हब्ब-ए-बवासीर खूनी का मानकीकरण और एचपीटीएलसी फिंगरप्रिंटिंग अध्ययन

¹पवन कुमार सागर, ²रामप्रताप मीना, ¹कुनाल साजवान, ³आर. मुर्गेशवरन, ⁴एस. मागेश्वरी और ⁵मीरा देवी श्री पी

औषधि मानकीकरण, औषधियों की सभी प्रक्रियाओं जैसे विनिर्माण प्रक्रिया (मानक संचालन प्रक्रिया) और गुणवत्ता सुनिश्चित करने के लिए सबसे अच्छी आधुनिक तकनीक है। अधिकांश पारंपरिक और वैकल्पिक औषधियां प्रभावशाली होती हैं लेकिन वैज्ञानिक मानकों की अनुपलब्धता के कारण इनकी कमी होती है। इसलिए हर्बल मिश्रणों को मानकीकृत और प्रमाणिक करने के लिए एक मानक तकनीक विकसित करने की आवश्यकता है।

हब्ब-ए-बवासीर खूनी नामक औषधि बवासीर-खूनी के उपचार में चिकित्सीय रूप से उपयोगी है। इसे नेशनल फॉर्मुलरी ऑफ यूनानी मेडिसन (भाग-VI) में उल्लिखित विधि के अनुसार तीन अलग-अलग बैचों में तैयार किया गया था। औषधि की गुणवत्ता का पता लगाने के लिए भेषजकोशीय मानकों, हाई परफॉरमेंस थिन लेयर क्रोमैटोग्राफी, फिंगरप्रिंट्स और गुणवत्ता नियंत्रण मानदंडों का मूल्यांकन करने के लिए वर्तमान अध्ययन किया गया। भौतिक-रासायनिक डाटा से पता चला कि औषधि में लोस ऑन ड्राइंग/मॉइस्चर (2.33%), टोटल ऐश (7.71%), एसिड इन-सोल्यूबल ऐश (4.33%), एल्कोहल सोल्यूबल एक्सट्रेक्टिव (20.39%), वाटर सोल्यूबल एक्सट्रेक्टिव (23.10%), पीएच ऑफ 1% एक्ज्यू सोल्यूशन (5.59), पीएच ऑफ 10% एक्ज्यू सोल्यूशन (5.66), एल्कोहल सक्सेसिव एक्सट्रेक्टिव (16.13%), क्लोरोफॉर्म सक्सेसिव एक्सट्रेक्टिव (7.86%) और बल्क डेन्सिटी ऑफ ग्रेन्यूल्स (0.546) मौजूद है। हाई परफॉरमेंस थिन लेयर क्रोमैटोग्राफी फिंगरप्रिंट्स ने 254एनएम, 366एनएम और विसिबल लाइट (वैनिलिन सल्फयूरिक एसिड रिएजेंट) पर विभिन्न निशान दिखाए। अध्ययन में माइक्रोबियल लोड, एफ्लार्टोक्सिन, भारी धातु और कीटनाशक अवशेषों की अनुपस्थिति का पता चला। यह डाटा हब्ब-ए-बवासीर खूनी के भेषजकोशीय मानकों को निर्धारित करने और ज़रूरतमंदों को गुणवत्ता औषधियां उपलब्ध कराने के लिए बहुत उपयोगी होगा।

शब्द कुंजी: हब्ब-ए-बवासीर खूनी, भौतिक रासायनिक, गुणवत्ता नियंत्रण, सुरक्षा मानदंड



Incidence of Rheumatoid Arthritis (*Waj-ul-Mafasil*) in Post-Menopausal Stages and its Response to Coded Compound Unani Oral Formulation, WM₃ Therapy

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Abstract

Forty patients of Rheumatoid Arthritis (RA) were selected for this study. All the patients were subjected to pathological and bio-chemical investigations. The details were recorded in a separate case sheet especially prepared for this purpose. The classification of these patients was done as per the criteria laid down by Unani System and American Rheumatic Association (ARA). The patients were treated with the Coded Compound Unani Oral Formulation, WM₃ Therapy, especially formulated for the patients of RA by Central Council for Research in Unani Medicine, New Delhi. After completion of the therapy, the patients got a significant remission in their signs and symptoms and their responses have been presented in the paper.

Keywords: Incidence, Post-Menopausal Stages, Rheumatoid Arthritis, Therapy, Waj-ul-Mafasil

Introduction

Waj-ul-Mafasil or Rheumatoid Arthritis (RA) in Modern term is a chronic progressive disease involving multiple joints and frequently associated with mild to moderate fever, general debility and other manifestations such as nodules under the skin and inflammations of the eyes. The onset is common between the age of 18 and 50 years. Of all the Rheumatic diseases, this is the one which causes the most severe crippling (Macleod, 1978, Hollander, *et al*, 1971). Among approximately 10,000,000 patients in US with Rheumatic diseases in the 1950's, an estimated 25% of the total had RA. These patients accounted for a very large proportion of the total "man days" lost as a result of all types of joint diseases. Incidence of at least one form of arthritis has been found in the skeleton of a Neanderthal man dating from about 40,000 BC (Anonymous, 1970, Anonymous, 1971).

The Dinosaurs of the Mesozoic Era had suffered from arthritis. The earliest known example of multiple arthritis is a fossil vertebra, a skeleton of a *Platycarpus* (a large swimming reptile) which lived about several years ago and now kept in the museum of Natural History of the University of Kansas, USA (Anonymous, 1979). It has been observed that the disease is more common in post-menopausal women than in child-bearing and signs and symptoms are more marked in the former due to hormonal (*i.e.* estrogen) imbalance which regulates normal bone metabolism.

An attempt was made to study the effects of double blind coded compound unani formulation namely; WM₃ on the patients of RA in both the groups of post-

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menopausal and child-bearing women at Regional Research Institute of Unani Medicine, Srinagar. The duration of the therapy was 12 weeks.

Material and Methods

The clinical study was conducted on the total number of patients of RA registered at the OPD of the Institute from January 1, 1989 to March 31, 1989. The patients were first diagnosed on Unani parameters as well as on Modern parameters of ARA criteria. All the patients (40) of RA were divided into two groups comprising 20 post-menopausal and 20 child-bearing women. The patients were between 32 and 75 years of age. In the post-menopausal group, out of 20 patients, 15% was in higher income group, 25% middle income group and 60% lower income group. Similarly, in child-bearing group, 25% was in higher income group, 30% middle income group and 45% lower income group (Table 1).

The patients in both the groups were put on coded compound Unani oral formulation, namely; WM₃ provided by Central Council for Research in Unani Medicine, New Delhi. The oral drug in the form of 500 mg tablet was given to the patients in the dose of one tablet three times a day after meals for 12 weeks. Before starting the treatment, haematological and bio-chemical investigations including RA factor were carried out. Routine investigations like Urine and Stool were also carried out to rule out any other associations. The patients were followed-up on weekly basis and they were asked to avoid some diets which would aggravate their symptoms.

Observations

It was observed that out of 10 classical patients of RA, 60% was in post-menopausal group and 40% in child-bearing group. Out of 12 definite patients of RA, 66.66% was in post-menopausal group and 33.33% in child-bearing group and out of six probable patients of RA, 66.66% was in post-menopausal group and 33.33% in child-bearing group. Similarly, out of 12 possible patients of RA, 58.33% was in post-menopausal group and 41.66% in child-bearing group (Table 2).

After 12 weeks of treatment, the response of the therapy was assessed in the patients and it was found that the patients in post-menopausal group had responded better than the patients in child-bearing group. Out of six classical post-menopausal patients of RA, 33.33% had complete remission, 33.37% had major improvement, 16.66% had minor improvement and 16.66% had no improvement. Similarly, in four classical child-bearing patients of RA, 50% had major improvement, 25% had minor improvement and 25% had no improvement. Out of eight definite post-menopausal patients of RA, 37.50% had complete remission, 25% had major improvement, 25% had minor improvement and 12.50% had no improvement. Similarly, in four definite child-bearing patients of

RA, 25% had complete relief, 50% had minor improvement and 25% had no improvement. Similarly, in four definite child-bearing patients of RA, 25% had complete relief, 50% had minor improvement and 25% had no improvement.

Out of four probable post-menopausal patients of RA, 50% had complete remission, 25% had major improvement and 25% had minor improvement. No one reported to have no improvement. Similarly, in two probable child-bearing patients of RA, 50% had minor improvement and 50% had no improvement. Similarly, in two probable child-bearing patients of RA, 50% had minor improvement and 50% had no improvement. No one had complete remission or major improvement. Out of seven possible post-menopausal patients of RA, 57.17% had complete remission, 28.57% had major improvement and 14.28% had minor improvement. No one reported to have no improvement. Similarly, out of five possible child-bearing patients of RA, 40% had complete remission, 20% had major improvement and 40% had minor improvement. No one reported to have no improvement (Table 3).

Discussion

At the age of 45 to 50 years, the menstrual cycles usually become irregular and ovulation fails to occur during many of the cycles. After a few months to a few years, the cycles cease altogether and the female sex hormones diminish rapidly to almost none at all. The cause of the menopause is 'burning out' of the ovaries. The women in post-menopause face several problems like increase in weight, rheumatic pains, arthritic changes in bone and joints, osteoporosis, arthropathy, osteoarthritis, fibrositis and disc lesions. A physiological decrease in skeletal mass occurs in post-menopause women (Mishell, 1987).

Throughout a woman's life about 450 primordial follicles grow into vesicular follicles and ovulate while literally thousands of ova degenerate. At the age of about 45, only a few primordial follicles remain to be stimulated by follicular stimulating hormones (FSH) and luteinizing hormones (LH) and the production of the estrogen by the ovary decreases as the number of primordial follicles approach zero. When estrogen production falls below a critical value or threshold level, the estrogen can no longer inhibit the production of FSH and LH nor can they cause oscillatory cycles. Instead, FSH and LH are produced thereafter in large quantities and continuously (Anonymous, 1981) (Figure 1). Estrogens are produced in low quantities for a short time after the menopause though aromatization of adrenal cortex sex hormones in the form of estron which is less potent and extra ovarian source for estrogen. The production of estrogens by the ovaries falls almost zero (Guyton, 1986).

In the subjects on estrogen therapy, it has been seen that the removal of the therapy resulted in bone loss which was equivalent to the fast component of

post-menopausal bone loss which indicates estrogen dependant bone remodeling (Mishell, 1987). This condition is seen mainly in women in their late fifties and later.

Many other joint problems, from the same cause, often clear up miraculously on hormones therapy (Reuben, 1976). Furthermore, it has also been observed that many aromatic compounds found in plants with a general grouping (OH C₆H₄ R) show estrogenic activity (Delvin, 1987) which is very essential for the women.

Conclusion

The post-menopausal patients of RA had more relief than child-bearing patients of RA. This is because of the fact that the herbal origin drug *i.e.* coded compound *Unani* oral formulation (WM₃) besides providing relief in the signs and symptoms of arthritis; it has also been able to show estrogenic activities which might have helped them in regulation of bone metabolism. It is, therefore, inferred that these *Unani* medicinal plants may be tried as an alternate in the crippling disease of RA of mankind.

Table 1: Income-wise Classification of Rheumatoid Arthritis Patients

S. No.	Income Groups	Post-Menopausal Patients N (%age)	Child bearing Patients N (%age)
1.	Higher Income Group	3(15.00)	5(25.00)
2.	Middle Income Group	5(25.00)	6(30.00)
3.	Lower Income Group	12(60.00)	9(45.00)
	Total	20(100.00)	20(100.00)

Table 2: Classification of Rheumatoid Arthritis Patients as per American Rheumatic Association

S. No.	Classification of Rheumatoid Arthritis	Criteria Points	No. of Patients	Stages of Womanhood	
				Postmenopausal Patients N (%age)	Child bearing Patients N (%age)
1.	Classical	+7	10	6(60.00)	4(40.00)
2.	Definite	+5	12	8(66.66)	4(33.33)
3.	Probable	+3	6	4(66.66)	2(33.33)
4.	Possible	+2	12	7(58.33)	5(41.66)
	Total		40	25(62.50)	15(37.50)

Table 3: Drug Response in Relation to Different Classification of Rheumatoid Arthritis Patients as per American Rheumatic Association (ARA)

S. No.	Classification of Patients of Rheumatoid Arthritis	Groups	No. of Patients	Drug Response			
				Complete Remission/ Improve-ment	Major Improve-ment	Minor Improve-ment	No Improve-ment
1.	Classical	Postmenopausal Childbearing	6	2(33.33)	2(33.33)	1(16.66)	1(16.66)
			4	- -	2(50.00)	1(25.00)	1(25.00)
2.	Definite	Postmenopausal Childbearing	8	3(37.50)	2(25.00)	2(25.00)	1(12.50)
			4	1(25.00)	- -	2(50.00)	1(25.00)
3.	Probable	Postmenopausal Childbearing	4	2(50.00)	1(25.00)	1(25.00)	- -
			2	- -	- -	1(50.00)	1(50.00)
4.	Possible	Postmenopausal Childbearing	7	4(57.14)	2(28.57)	1(14.28)	- -
			5	2(40.00)	1(20.00)	2(40.00)	- -
	Total		40	14(35.00)	10(25.00)	11(27.50)	5(12.50)

Anterior Pituitary Gland

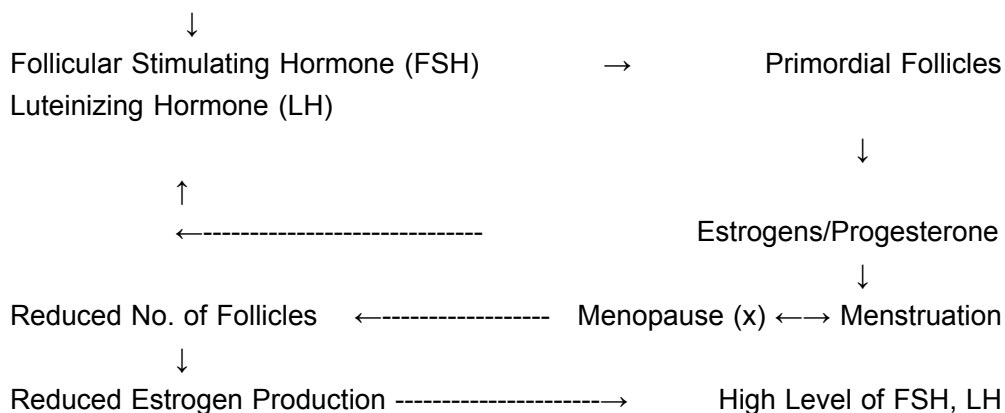


Fig. 1: Diagrammatic Representation of Pituitary Gland Activity

Acknowledgement

The authors are thankful to the Director General, Central Council for Research in Unani Medicine, New Delhi for providing the drug and other facilities to carry out the study at Regional Research Institute of Unani Medicine, Srinagar. The authors are also thankful to the patients of the study for their cooperation and support in completing this study.

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सारांश

पोस्ट-मिनोपॉज़ल स्टेज में रूमेटोइड आर्थराइटिस (वजा-उल-मफ़सिल) की व्यापकता और कोडित यौगिक यूनानी मौखिक मिश्रण, WM₃ थेरेपी के प्रति इसकी अनुक्रियाएं

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इस अध्ययन के लिए संधिवात गठिया के 40 रोगियों का चयन किया गया। सभी रोगियों का रोगात्मक और जैव-रासायनिक विश्लेषण किया गया। विशेष रूप से इस उद्देश्य के लिए तैयार एक केस शीट में रोगियों के विवरण दर्ज किए गए। इन रोगियों का वर्गीकरण यूनानी पद्धति और अमेरिकन रूमैटिक एसोसिएशन (ए.आर.ए.) द्वारा निर्धारित मानदंडों के अनुसार किया गया। रोगियों का उपचार केन्द्रीय यूनानी चिकित्सा अनुसंधान परिषद्, नई दिल्ली द्वारा संधिवात गठिया के रोगियों के लिए विशेष रूप से तैयार किये गये चिकित्सा कोडित यौगिक यूनानी मौखिक औषधि मिश्रण, WM₃ थेरेपी से किया गया। थेरेपी के पूरा होने के बाद, रोगियों के लक्षणों में महत्वपूर्ण सुधार पाया और उनकी अनुक्रियाएं पेपर में प्रस्तुत की गईं।

शब्द कुंजी: व्यापकता, संधिवात गठिया, उपचार, वजा-उल-मफ़सिल



Unani Classification of Dietary Substances on the Basis of Primary Constituents (*Arkān*)

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Abstract

Every system of medicine has its own way of understanding the principles and philosophies of pharmacotherapy. So it is true for diet too. Diet is the basic sustenance of human body and plays a key role in health. Outburst of many new diseases wonder struck the medical sages and clinicians. Diet has been taken as a central focus in many disciplines of research. Unani medicine has always advocated diets for treatment because diseases are the result of disturbance in humours either quantitatively or qualitatively. Humours are the by-product of diet which is the ultimate form of four *Arkān*. Quantities of *Arkān* in diets are varied so they produce different kinds of humours and have different constitutions. No diet produces same effect in all bodies and in all stages of life. Therefore, a particular diet is recommended for different diseases, bodies and stages of life because dissolution occurs continuously in the body. The effects of dissolution do not remain the same for all the times. Sometimes, dissolution of one *Rukn* is more than the other or vice-versa. In these conditions, body needs substitution for the loss. Keeping these things in view, an attempt has been made in this paper to classify the dietary substances on the basis of primary constituents.

Keywords: *Arkān*, Constitution, Diet, Humours

According to Unani philosophy, the primordial substances of *Mawā'id-i-Thalātha* /three primary matters are four in numbers which are called as *Arkān* (Jurjani 2010, Sina 2006, Arzani 2002, Jalinoos 2008, Masihi 2008, Kabiruddin 2001). From the Empedocles (440 BC) physicians have been believing that *Arkān* is the core concept of Unani medicine (Kabiruddin 2001). There are mainly two terms often used for primordial substances viz. *Anāsir/ Arkān* (at the time of genesis) and *Uṣṭuqussāt* (at the time of dissolution). Two *Arkān* out of four are light i.e. fire and air and remaining two are heavy i.e. water and earth (Sina 1993).

Aristotle has described the relation among the four primordial substances in respect of their four sensible qualities either contrary or similar to one another (Tabri 2010). The amalgam of quantities of *Arkān* is different and according to the ratio of this difference, the constitution of every species of universe is also different, for example; constitution of horse is different from human being, because the quantities of *Arkān* in horse are different from human being. Since the constitution of species is different, it is also possible that this difference may be within the species but it will be within a limit (Ibn Rushd 1987). As observed in human beings, plants and animals also have a particular constitution which reflects their characteristics and properties. Their constitution may be expressed in simple forms i.e. hot, cold, moist, dry and in compound forms i.e. hot and moist, hot and dry, cold and moist and cold and dry. The characteristics and actions of all these things differ from others because of their constitutional difference,

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therefore, animals, plants and minerals are included in the diets and medicines (Takmilī 1985).

Due to gross diversity in qualitative properties of diets, it is difficult to suggest balanced diets for anybody in general without understanding his/her constituent variations. For instance, few foods produce motadil mizaj *i.e.* sanguine and other few produces hot or cold. Therefore, at the time of preparation of food, the quality can be changed by adding something else for better assimilation or excretion from the body. According to Hippocratic connotation, the qualities of foods are analogous to four humours of the body. Consumption of one kind of food for a very long time is not good for health so more or less blending is required. So, the consumption of balanced food and life-style play a very crucial role in prevention of diseases and preservation and promotion of health. On the other hand, deviation of humours from their moderate state in amount or quality results in *Amrāz-i-Māddī* (materialistic diseases). Constitution of organs remains healthy till the blood reaching them in moderate quantity and quality or both (Rushd 1987). The four qualities evolved by the amalgamation of *Arkān Arba'a* exhibit their characteristics as given below:

- The qualities sensed by touch, *Kasāfat* (density) is produced by coldness, *Sakhānat* (warmth) (Balyawi 2002, Jalinoos 2008) by heat, *Layyinat* (softness) by moisture, *Salābat* (hardness) and *Hashāshat* (brittleness) by dryness.
- The qualities of vision are actually colors which depend upon *Kasāfat* and rarity (Balyawi 2002, Jalinoos 2008) and these two qualities are based on coldness and hotness respectively. *Kasāfat* produces darkness/blackness and rarity produces clearness/whiteness.
- Qualities of hearing include all types of sounds (Jalinoos 2008)
- Qualities of smell and taste depend upon constitution, *i.e.* *Hiddat* (acuteness), *Hirrāfat* (acridity), *Mirārat* (bitterness) and *Malūhat* (saltiness) whereas, *Qabz* (astringent), *Afūsat* (pungentness) and *Hamūzat* (sourness) depend upon cold constitution and moderately cold, and hot constitution exhibits *Halāwat* (sweetness) and *Dasūmat* (oiliness) (Jalinoos 2008).

Property of sweetness is found in all kinds of foods and these foods are the sole source of sustenance of all animals, so, the taste of all organs is sweet (Jalinoos 2008). In addition, it is absorbed most (Arzani 2002)

If consumed things exert their effects by their matter only then it is called *Ghidhā'-i-Mutlaq* (absolute diet) and by their quality alone, it is called *Dawā'-i-Mutlaq* (absolute drug). In the universe nothing is absolute diet or absolute drug. Everything exerts its effects partly because of its quality and partly because of its matter. On the basis of their dominant component, they are called as *Ghidhā'-i-Dawā'ī* (drug diet) or *Dawā'-i-Ghidhā'ī* (dietary drug) (Israil YNM). Some substances exert their effects only by their *Sūrat-i-Noayyah* (morphological form) and known as *Zu al-khāssah* (having speciality) (Khan 2012, Israili YNM). *Ghidhā'-i-Mutlaq* does not change

the quality of the body. It is converted into *Khilṭ* (humour) and assimilates into the organ. It causes increments in the body into three dimensions. In *Ghidhā'-i- Dawā'ī*, the matter is dominant and after action and reaction in the body it produces *Khilṭ* which has the ability to assimilate into it. Also, it affects the constitution of the body by bringing temporary change in it, e.g. *Kahū*, *Aash-i-Jau*, *Khayar*, *Qisa* etc. *Dawā'-i-Ghidhā'i* is just contrary to *Ghidhā'-i- Dawā'ī* and it is dominated by its quality, e.g. *Gandanā*, *Pudinā*, *Mako*, garlic etc. (Khan 2012)

Classification of Diets

Single diets are of two types which are as given below:

- 1) *Sāleh al-Kaymūs* (normal humour): The diets produce pure and natural *Dam* (sanguine). It contains other humours in temperamentally desired amounts.
- 2) *Raddi al-Kaymūs* (morbid/immature humour): It is just opposite to *Sāleh al-Kaymūs*.

Each type of diet is further classified on the basis of humoral consistency as given below:

- 1) *Laṭīf* (subtle): The diet which produces diluted sanguine (Quraishi 2006). Because of its subtleness, it is easily influenced and digested by *Quwwat-i-Mughayyirāh* (changing power) and becomes similar to essence of organs. Therein one or two subtle *Arkān* i.e. *Rukn Nār* or *Rukn Hawā'* or both are dominant (Nafis 1954).
- 2) *Kathīf* (heavy): Therein one or two heavy *Arkān* i.e. *Rukn Arḍ* or *Rukn Mā'* or both are dominant (Nafis 1954). It produces viscous sanguine (Quraishi 2006).
- 3) *Mutawassiṭ* (moderate): It is moderate in nature (Nafis 1954) and produces the sanguine which is moderate in consistency, neither diluted nor viscous (Quraishi 2006) (Table 1)

Diets are further divided on the basis of nutritional value as given below:

- 1) *Kathīr al-Taghdhiā* (high calorie): The diet which causes the production of abundant amount of sanguine.
- 2) *Qalīl al-Taghdhiā* (low calorie): The diet which causes the production of scarce quantity of sanguine.
- 3) *Mutawassiṭ al-Taghdhiā* (moderate calorie): The diet is in between them.

Thus, all types of diets are classified into eighteen groups (Israili YNM, Quraishi 2006)

Physico-chemical Properties

If strong heat acts on subtle matter, it produces acidity. If it acts on heavy matter, bitterness is produced, if it acts on moderate substance, then *Malūhat* (salty taste) is produced.

If strong coldness acts upon *Laṭīf* matter, it produces *Hamūzat* (sourness); if it acts upon heavy matter, *Afūsat* (pungency) is produced; and if it acts on moderate matter, then *Qabūzat* (constriction/astringent) is produced.

When moderate heat acts on *Laṭīf* matter, it produces *Dasūmat* (oiliness); if it acts on viscous matter, it produces sweetness; and if it acts on moderate matter it produces *Tafih* (tastelessness).

Among all tastes, acidity is most hot followed by bitterness and salty. On contrary, sourness is the coldest one followed by *Afusat* and *Qabuzat* and so on.

Tastes may be similar or different from one another; the difference is due to severity/ strongness, weakness and variability of matters e.g. acidity and bitterness (Israili YNM)

If diet has a pleasant taste, it will be moderately hot and moist and it would be similar to constitution of body for example; honey (Tabri 2010), (Table 2)

Characteristics of Tastes

Tastes are classified on the basis of their characteristics and actions

Hirrīf (Acridity)

Its actions are *Jilā* (detergent), *Taqashshur* (scraping of skin surface), penetration into the skin surface, *Taftīh* (deopilation), *Tarqīq* (dilution), *Taltīf* (refining/attenuation), *Taqtī'* (intersection), *Tahlīl* (dissolution), *Tanqiya* (purgation), *Mana'e Ta'affun* (antiseptic), *Musakhkhin* (heating), *Jalānā* (burning) etc. These are due to their subtle essence, e.g. *Mirch* (pepper), *Rāī* (mustard) (Israili YNM). Its smell is strong and causes burning sensation on tongue (Maghribi 2007) *Tez Chatpatī* (acid) and *Nārī* (fiery) (Tabri 2010)

Murr/Talkh (Bitter)

Its actions are *Jilā*, *Taltīf*, *Tarqīq*, *Taqtī'*, *Mukhashshin* (roughening agent), *Tajfīf* (desiccation), *Taskhīn* (calorification), *Mana'e Ta'affun* etc. It is weaker than *Hirrīf* in its actions except having desicating and anti infective properties e.g. *Murr Makkī*, *Elwah* (Israili, YNM). *Kadwī* (bitter) thing will be hot and contains *Nāriyat* (fiery matter) (Tabri 2010)

Malih (Salty)

Its actions are *Taftīh*, *Taltīf*, *Tahlīl* (dissolution), *Jilā*, *Taqtī'*, *Mana'e Ta'affun* and *Motadil Harārat*. It is proximate to *Murr* in its action (Israili, YNM). This taste contains *Harārat* (heat) and *Arđiyat* (earthy matter), (Tabri 2010) *Mukhashshin* for tongue (Maghribi 2007).

Haamiz/Tursh/Khattā (Sour)

Its actions are *Taqtī'*, *Taltīf*, *Nufūz* (penetration), *Dhuldhulāhat* (flaccidity), deobstruent, *Jilā* etc. It provides coldness and moisturization due to its cold and moist essence, e.g. *Sirkah* (vinegar), curd water.

Afis/Kasīlā (Pungent)

It constricts and roughens the tongue. It has *Arđiyat* and *Kathāfat-i- Jawharī* (dense essence) so it produces density, hardness, roughness and coldness, e.g. *Mazū*, *Balūt* (Israili, YNM). *Kasīlī* (pungent) thing contains *Arđiyat* and exhibits coldness (Tabri 2010).

Qābiz

It is similar to *Afis* in its actions but weaker than *Afis*, because it is less constrictive than *Afis*, e.g. *Chhāliya*. It causes coldness, dryness, hardness, roughness, density and constriction (Maghribi 2007).

Roghanī (Oily)

It softens, mollifies and expands the surface of tongue; its actions are wetness, softening, *Dhuldhulāhat*, *Phislan* (slippery), coction and heating. It metabolizes towards the dominant humour, e.g. *Ghī* (butter), oil.

Hulw/Shīrīn (Sweetness)

It softens, mollifies, dilates and levels the surface of tongue. Their actions are *Jilā*, mollification, coction, *Layyināt* (softness), *Tarqīq*, melting and produce little heat due to its moderate capacity of heat and *Latāfat* (subtleness). It metabolizes towards the dominant humour, e.g. sugar, honey. If sweetness is in excess amount, then it produces more heat and causes roughness on the surface of tongue and thirst, e.g. old honey, *Qand Siyāh* (black sugar).

Tafih/Masīkh/Phīkā (Tasteless)

It softens and mollifies the surface of tongue, put out the heat, thirst and remove the roughness.

Hiddat (Acuteness)

Taste is a sign of heat. Roughness, astringent and *Afūsat* are the signs of dryness and *Rikhāwat* (dullness), softness and *Talyīn* are the signs of moisture. As a whole, the action of every diet and medicine depends upon dominant quality/ qualities, e.g. if hotness is dominant then, heating, subtraction and dissolution will definitely be present in it. If coldness is dominant, then cooling, unionization of parts will be found in the same way. If moisture is dominant, then it will produce *Narmī* (mollification), moistness and flow. In case of dominance of dryness, hardness, retention, roughness and density will be there (Israili YNM)

Masihi (2008) says that bitter taste is inclined towards heat and dryness but hotness is dominant. Salty taste is inclined towards heat and dryness but dryness is dominant. In case of *Qābiz* or *Afis*, their inclination is towards coldness and dryness but dryness is dominant. If it is sour, it will be inclined towards coldness and dryness but the coldness will be dominant.

A normal and healthy body always favours sweetness because sweetness is a compound of *Harārat* (heat) and *Rutūbat* (moistness). Any variation in these qualities results in alteration of taste (Masihi 2008, Tabri 2010). For example, in the beginning fruits remain hard and contain excessive *Arđiyat*, and are of *Kasīlā* taste. Thereafter, under the influence of scorching sun, they become *Tursh*, when *Harārat* and *Rutūbat* become moderate, then they become ripened and sweet. The fruits which exposed to sunlight become sweet, juicy and reddish colour, otherwise, remain sour and greenish (Tabri 2010)

Those things which have high glycemic index and sweet provide nutrition, on contrary, excessive bitter things do not have this kind of quality. Also, every *Khatmitthī* (mix of sour and sweet) thing has less nutrition value (Tabri 2010). Sour and *Afis* things are cold but the *Afis* is cold and viscous and bitter is cold and subtle. All cold tempered things are suitable for the person of hot constitution (Jurjani 2010). The diet having sweetness or *Tezī* (acuteness) or sourness or *Narmī* (softness) has laxative effects (Jurjani 2010).

Dietary classification on the basis of their dominant Rukn is presented in different tables from 1 to 12.

Table 1: The Action of Qualities on Matters and their Tastes

Māddah (Matters)	Kayfiyat (Qualities)	Harārat (Hotness)	Burūdat (Coldness)	Motadil (Moderate)
<i>Laṭīf</i> (subtle)		<i>Hirīf</i> (Acridity) (Hot & Dry)	<i>Hāmiz</i> (Sour) (Cold & Moist)	<i>Roghanī</i> (Oily) (Moderate)
<i>Kathīf</i> (Course/Heavy/ Thick)		<i>Murr</i> (Bitter) (Hot & Dry)	<i>Afis</i> (Pungent) (Cold & Dry)	<i>Hulw</i> (Sweet) (Moderately inclined to Heat)
<i>Motadil</i> (Moderate)		<i>Mālih</i> (Salty) (Hot & Dry)	<i>Qābiz</i> (Astringent) (Cold & Dry)	<i>Tafih</i> (Tasteless) (Moderately inclined to Coldness)

Table 2: Taste According to Quality of Diets

Hottest Diet	<i>Harrāfat</i> (Acridity)
Coldest Diet	<i>Hamūzat</i> (Sourness)
Moderate Diet	<i>Dasūmat</i> (Oiliness)
Lowest in Heat in comparison to Hot Diets	<i>Malūhat</i> (Saltiness)
Lowest in coldness in comparison to Cold Diets	<i>Qabūzat</i> (Astringent)
Lowest in moderation in comparison to Moderate Diets	<i>Tafāhat</i> (Tastelessness)

Table 3: Botanical Species and their Dominant Rukn

S. No.	Common Name	English Name	Botanical Name	Mizāj (Constitution)	Istihalah (Transformation)	Action	*P. Dominant Rukn
1	Ushnā/ Charelā	Stone Flower (4)	<i>Parmelia perlata</i> (1)	Hot1/cold Dry2(34)		Qabiz(astringent), Muhallil(dissolvent), Munawwim (hypnotic) (34), Mufreeh (exhilarant), Muqawwi-i-Qalb (Cardiac Tonic) (14)	Nār
2	Anjadān/ Hilteeīt	Asafoetida(6)	<i>Ferula asafoetida</i> H.Karst (6)	Hot3Dry3 (34,28) Hot4Dry2(15)	Asīr al-Haḍīm (delayed digestion) (28)	Mulattif(demulscient) (34) Muhallil-i- Riyāh (Anti-flatulence), Haḍīm (digestive), Naffakh (flatulent) (15), Musakkhkhin-i-meda (calorific for stomach) Muhayyij-i-Baah (sex stimulent) (28)	Nār
3	Bisbāsah/ Jawitrī	Mace (4)	<i>Myristica fragrans</i> Houtt (4)	Hot2Dry2(34)	Laṭīf (subtle)(34)	Muhallil-i-Riyāh (antiflatulence)(34)	Nār
4	Balelā/ Bahedā	Belleric Myro- balan (5)	<i>Terminalia bellerica</i> (Gaertn) (Roxb.)(5)	Cold2 Dry2(34), Cold1 Dry2(15)	Laṭīf (subtle)(15)	Mulattif, Muqawwi-i-Meda(stomachic), Mushil-i-Sawdā' (melanagogue) wa Ṣafra' (cholagogue)(15)	Ard

S. No.	Common Name	English Name	Botanical Name	Mizāj (Constitution)	Istihalah (Transformation)	Action	*P. Dominant Rukn
5	Basal/ Piyāz	Onion (6)	<i>Allium cepa</i> L.(6)	Hot3 Moist4(34), Hot3Dry3(15), Hot3Moist2 (28)	Der Haḍīm (delayed digestion) (34) Ghaleez- al Jawhar (filthy) (15), Khlīṭ Radi (morbid humour) Ghālīz (filthy) (15,34)	Mulattif(34) Haḍīm(digestive), Mushtahi(appetiser), Muqawwi-i-Bāh (sexual tonic(15)), Mufatteh-i-Sudad (deobstruent)(15)	Ha-wā'
6	Jawzbova/ Jayphal	Nutmeg (6)	<i>Myristica fragrans</i> Houtt (6)	Hot3Dry3(34) Hot2Dry3(15)		Mulattif, Mufarreh (exhilarant(4)) Haḍīm (digestive) (15)	Nār
7	Filfil Darāz/ Pīpal	Long Pepper (6)	<i>Piper longum</i> L. (6)	Hot2Dry2(15)		Nafī-Nafkh (antiflatulence), Mulattif, Mufatteh-i-Sudad, Haḍīm(15)	Nār
8	Dārchīnī	Cinnamon(6)	<i>Cinnamomum zeylancium</i> Blume (6)	Hot3Dry3(34) Hot2Dry2(15) Hot2Dry3(28)	Latīf (34,15,28)	Muhalil, Mufattih (deobstruent), Haḍīm, Mulattif-i-Rooh (demulscient for pneumonia)(15)	Nār
9	Ward/ Gulāb	Rose Flower (4)	<i>Rosa damascena</i> Mill. (4)	Cold1 Dry2(34, 15)		Mushil-i- Šafrā' (cholagogue)(21) Mufarreh (exhilarant(4)), Mulattif(15)	Mā'
10	Zanjabīl/ Sonth	Ginger (6)	<i>Zingiber officinale</i> Rose (6)	Hot3 Dry2(34), Hot3Dry3(15)		Haḍīm, Kāsir-i-Riyāh (carminative(4)), Dāfi' Balgham wa Rutūbat (remover to phlegm & fluids), Mushtahi(appetizer) (15)	Nār

S. No.	Common Name	English Name	Botanical Name	Mizāj (Constitution)	Istihalah (Transformation)	Action	*P. Dominant Rukn
11	Zāfrān	Saffron (6)	<i>Crocus sativus</i> L. (6)	Hot2Dry1 (34,15), Hot2Dry1(28)		Muwallid-i-Šafrā'(cholagogue) (34), Mufarreh (exhilarant(4)), Muqawwi(tonic)(15), Musakhkhin (calorific)(28)	Nār
12	Habb al-Nīl/ Kālā Dānā	Indigo/ Pharbitis(4)	<i>Ipomoea hederacea</i> L. (4)	Hot3Dry2(34) Hot3Dry3(15)		Mufatteh-i-Sudad (deobstruent), Mushil -i-Balgham (phlegmagogue) (15)	Nār
13	Kumūn/ Zīrah Siyāh	Black Caraway(5)	<i>Carumcarvi Jacq</i> L. (5)	Hot2Dry3(34), Hot2Dry2(15), Hot3Dry3(28)		Muhalil-i-Riyāh wa Nafkh (antiflatulence), Muqawwi-i-Meda (stomachic) wa Jigar (hepatotonic), Dāfi' Qabz (laxative) (15), Haḍīm, Mudirr-i-Baul (diuretic)(28)	Nār
14	Kazbarah/ Dhanīa	Coriander(6)	<i>Coriandrum sativum</i> L.(6)	Cold1Dry2 (34), Cold2 Dry2(15), Cold1Dry2(28)		Mufarreh, Muqawwi-i-Qalb (cardiac tonic) wa Dimagh (brain tonic) wa Meda, Mani' Abkharat (antivaporization)(15), Mudirr-i-Baul(28)	Arḍ
15	Milh/ Namak	Table Salt	(Chemical Composition) Sodium Chloride (38)	Hot-Dry(16) Hot2Dry2(15) Hot2-Dry3(28)		Mu'atṭis (sternutatory), Haḍīm, Muqi (emetic) (15), Jalī (detergent), Mujaffif (desiccant), Qatī'e Akhlāṭ-i-Ghalīzā(remove to viscous humours) (28)	Nār

S. No.	Common Name	English Name	Botanical Name	Mizāj (Constitution)	Istihalah (Transformation)	Action	*P. Dominant Rukn
16	Na'na'/ Pudīnah	Garden Mint (1)	<i>Mentha viridis</i> L. (1)	HotDry(34,28) Hot2Dry2(15)	Latīf (34, 15)	Muhallil, Mushil-i-Sawdā' wa Balgham(15)	Nār
17	Nankhwāh/ Ajwā'n	Bishop's weed (6)	<i>Trachyspermum ammi</i> L. Sprague (6)	Hot3Dry3 (34, 15, 28, 23)	Latīf (28)	Mufatteh-i-Sudad(deobstruent) (34, 15), Haḍīm(15)Muhallil-i-Riyāh(antiflatulen-ce), Musakkhin-i-meda wa kabit (calorific for stomach & liver)(28)	Nār
18	Sāzaj/ Tez pat	Indian Cinnamon (5)	<i>Cinnamomum tamala</i> Buch.-Ham. (5)	Hot2Dry3(34) Hot3Dry2(15)		Mufarreh, Mushtahi, Mushil-i-Sawdā' (melanagogue)(15)	Nār
19	Filfil Siyāh/ Mirch Siyāh	Black Pepper (6)	<i>Piper nigrum</i> L. (6)	Hot3Dry3 (34, 15) Hot4 Dry4(28)	Latīf (28)	Munaqqi-i-Balgham-i-Lazij(expectorant for vitreous phlegm)(34, 15), Muhallil, Mushtahi, Mulattif(15), Haḍīm(28)	Nār
20	Qaranful/ Laung	Clove (6)	<i>Syzygium aromaticum</i> L. (6)	Hot3Dry3 (34, 15)		Mufarreh, Haḍīm, Mushtahi, Nafi' Sawdā' wa Amraz-i-Dimaghi(beneficial for atrabile and brain) (15)	Nār
21	Qāqulah/ Ellā'chī	Greater Cardamom (7)	<i>Amomum subulatum</i> Roxb. (7)	Hot3Dry3 (34, 15)		Mufarreh, Musakkh-in, Haḍīm, Mulattif(15)	Nār

S. No.	Common Name	English Name	Botanical Name	Mizāj (Constitution)	Istihalah (Transformation)	Action	*P. Dominant Rukn
22	Rāzyānāi/ Saunf	Fennel (5)	<i>Foeniculum vulgare</i> Mill.	Hot2Dry2(15), Hot3Dry1(28)	Asīr al-Hadīm(28)	Muhallil-i-Riyāh, Dāfi' Balgham (remover of phlegm)(15), Mufatteh-i-Sudad (deobstruent)(28)	Nār
23	Shonīz/ Kalonji	Black Cumin (5)	<i>Nigella sativa</i> L. (5)	Hot3Dry3 (34,28) Hot2Dry2(15)	Latīf(28)	Jalī, Musakhkhin (15), Qatī' balgham (remover of phlegm)(28)	Nār
24	Thom/ Lahsan	Garlic (6)	<i>Allium sativum</i> L. (6)	Hot3Dry3 (34,15) Hot4Dry4(28)	Muwallid-i-Şafrā' Kurrathī (genesis of excessive hot & dry type of Şafrā' mixed with Sawdā') (17)	Jalī, Muhallil, Muqarreh(ulcerative) Qatī'e Akhlāṭ-i- Ghaliẓā(remover of filthy humours)(15), Musakhkhin-e-Meda Bārid, Kāsir-e-Riyāh (carminative(4))(28)	Nār
25	Khardal/ Rāṭ	Black Mustard (6)	<i>Brassica nigra</i> L. (6)	Hot3Dry3 (34,15,28)		Mufatteh-i-Sudad (deobstruent)(34), Haḍīm Muhammir (rube-facient), Jalī, Muhallil(15)	Nār
26	Khash-khāsh	Caranation Poppy (2)	<i>Papaver somniferum</i> L. (2)	Cold3Dry3 (34) Cold2Moist1 (15) Cold3Dry3(28)	Asīr al-Hadīm, Qaleel al-Taghdhiya (low calorie diet)(28), Dam-i-Mahmood (normal blood) (15)	Munawwim (hypnotic) Mughazzi (nutritive), Mughalliz-e-Akhlāṭ (inspissant to humours) (15)	Arḍ

S. No.	Common Name	English Name	Botanical Name	Mizāj (Constitution)	Istihalah (Transformation)	Action	*P. Dominant Rukn
27	Haldī	Turmeric (6)	<i>Curcuma longa</i> L. (6)	Hot2Dry2(34) Hot3Dry3(15)		Jalī, Muhallil, Dāfi' Fasad-i-Balgham wa Šafra' wa dam (remover to vitiation of phlegm, bile & blood) (15)	Nār
28	Filfil Surkh	Chilli (6)	<i>Capsicum annuum</i> L. (6)	Hot Dry (30)		Haḍim, Kāsir-i-Riyāh (30)	Nār
29	Zīrah Rūmi	Caraway (6)	<i>Carum carvi</i> L. (6)	Hot2 Dry2 (18)		Dāfi' Riyāh, Muqawwi-i-Medā, Hāzim (18)	Nār
30	Zīra Safaid	Cumin (6)	<i>Cuminum cyminum</i> L. (6)	Hot2Dry3(18)		Muhallil-i- Riyāh, Qābiz, Musakhkhin, Mulattif (18)	Nār
31	Elā'chī Khurd	Cardamom (6)	<i>Elettaria cardamomum</i> (L.) Maton (6)	Hot Dry (9)		Mufarreh, Kāsir-i-Riyāh, Muqawwi-i-Medā (9)	Nār

Table 4: Classification of Various Kinds of Grains and Seeds and their Dominant Rukn

S. No.	Common Name	English Name	Botanical Name	Mizāj (Constitution)	Istihalah (Transformation)	Action	*P. Dominant Rukn
1	Bājra	Pearl millet (23)	<i>Pennisetum spicatum</i> L. (23)	Cold1 Dry2 (16, 15, 28)	Der Haqm, (15, 28) Saqeel (Heavy)(15), Dam-i-Lazij (vitreous blood) (15) Dam-i-Radi (morbid blood) (28), Khilt-e-Ghaliz (viscous humour)(33) Qaleel al-Ghidha' (15, 28)	Qabiz(15), Mudirr-i-Baul(28)	Arq
2	Til/ Simsim	Sesamum (30)	<i>Sesamum indicum</i> L. (30)	Hot2 Moist2(16) Hot1 Moist1(15) Hot1(28)	Der Haqm(16, 28) Khilt Ghaliz (16, 28), Salih al-Kaymus (normal humour) (15), Qaleelul Ghidha' (15)	Mulayyin (Laxative) (15), Murkhi(relaxant) Mughadhdhi (nutritive)(28)	Ha-wā'

S. No.	Common Name	English Name	Botanical Name	Mizāj (Constitution)	Istihalah (Transformation)	Action	*P. Dominant Rukn
3	Jao	Barley (38)	<i>Hordeum vulgare</i> L. (38)	Cold1 Dry2(16), Cold1 Dry1(15,28)	Qaleelul Ghidhā' (15)	Musakkin-i-Dam (calmative effect on blood) Qabiz (15) Jalī, Mubarriid (refrigerant) Mughazzi (28)	Arq
4	Bāqlā	Bean (2)	<i>Vicia faba</i> L. (38)	(Fresh) Cold Moist (Dry) Cold Dry (16), Cold Moist (15) (Fresh) Moist1 (Dry) Dry1 (28)	Der Haḍm (15,28) Dam-i-Ghalīz (16,15), Balgham wa Sawdā' (15)	Muhallil, Jalī (15), Naffakh (flatulent) (15,28), Musaddid (obstructive) (28)	Arq
5	Chanā	Gram (38)	<i>Cicer arietinum</i> L. (38)	Hot Dry (16), Hot1 Dry1 (15) Hot1 Moist1 (28)	Asīr al-Haḍm (28) Kathīr al-Ghidhā' (plentiful diet) (15), Mughazzi (28)	Qatī'e Akhlāṭ (remover of humours) (16) Naffakh (flatulent) (15,28), Muwallid-i-Laban (galactopoietic) wa Manī (spermatogenic) (15,28), Mulayyīn (15) Mudirr-i-Baul, Mushil (pergative) (28)	Nār
6	Chāwal	Rice	<i>Oryza sativa</i> L.	Hot1 Dry (16), Hot1 Dry2 (15,28)	Khiit Jayyid (natural humour) (16), Mughazzi (15,28)	Musakkin-i-Harārat, Musammin, Muwallid-i-Manī (18)	Nār

S. No.	Common Name	English Name	Botanical Name	Mizāj (Constitution)	Istihalah (Transformation)	Action	*P. Dominant Rukn
7	Gehūn	Wheat (38)	<i>Triticum aestivum</i> L. (38)	Moderate & Hot(16), Hot1 & Mderate (15,28)	Kathīr al-Ghidhā', Dam-i-Sāleh(16,15,28)	Musammin, Muhallil, Muqawwi-i-Bāh(18)	Mā'
8	Makaṭ	Indian Corn Maize (23)	<i>Zea mays</i> L. (23)	Cold Dry(16), Cold1 Dry2(15,28)	Der Haḍm (15,28), Ghālīz(16) Muwallid-i-Balgham, Safrā'(15), Dam-i-Radi (morbidity blood), Qaleelul Ghidhā'(28)	Qabiz(15), Mudirr-i-Baul(28)	Arq
9	Masūr	Lentle (23)	<i>Lens culinaris</i> Medic.	Cold2 Dry3(16), Cold2 Dry2(15), Moderate Dry2(28)	Ghālīz (16), Der Haḍm (16,15,28) Dam-e-Radi (morbidity blood), Sawdā'(16), Dam-i-Sawdā'wi(15,28)	Naffakh (flatulent)(16,,15,28), Qabiz(15)	Arq

S. No.	Common Name	English Name	Botanical Name	Mizāj (Constitution)	Istihalah (Transformation)	Action	*P. Dominant Rukn
10	Māsh	Mash Bean	<i>Vigna radiata</i> L. Wilczek	Cold1 Dry1(16,28)	Der Haḍm(16,28) Qaleelul Ghidhā'(28), Jayyid al-Kaymus (good chyme food)(16)	Naffakh (flatulent)(16,28)	Arḍ
11	Methī/ Hulbā	Fenugreek (6)	<i>Trigonella foenum graecum</i> L. (6)	Hot2Dry2 (16,15)		Mulayyin, Muhalili-i-Riyāh(15)	Nār
12	Katān/ Alsī	Lin Seed(38)	<i>Linum usitatissimum</i> L. (38)	Hot1 Moderate (34,28) Hot1Dry1(15)	Der Haḍm (34,15,28) Qaleelul Ghidhā'(34,28)	Naffakh (flatulent)(34,15,28) Muwallid-i-Mani (spermatogenic) (15,28)	Nār
13	Matar	Garden Pea(23)	<i>Pisum sativum</i> L. (23)	Hot1Dry3(34), Hot1 Dry2(15)	Khilt Fasid (vitiated humour) (34,15)	Jalī, Mukhrij wa Munaffith-i-Balgham (expectorant)(15)	Nār
14	Quilt/ Kulthī	Horse Gram(5)	<i>Vigna unguiculata</i> L. (5)	Cold2 Moist1(34), Hot2Dry2(15)		Mufattit-i-Hasat (lithotriptic), Mushtahi, Dāfi' Balgham (remover to phlegm)(15)	Nār
15	Arhar	Cango Pea(9)	<i>Cajanus cajan</i> L. Millsp.	Cold2 Dry2(15)	Der Haḍm (15)	Naffakh (flatulent), Dāfi' Safrā'(remover to bile), Fasad-i-Dam wa Balgham(chronic abnormality of blood & phlegm)(15)	Arḍ

S. No.	Common Name	English Name	Botanical Name	Mizāj (Constitution)	Istihalah (Transformation)	Action	*P. Dominant Rukn
16	Mūng	Mung Bean	<i>Vigna radiata</i> L.	Cold1 Dry(15)	Khiṭ Sāleh (15)	Naffakh (flatulent), Musakkin-i- Ṣafrā' wa Dam(calmlative effect on bile and blood) 15)	Arq
17	Jawār	Maize (23)	<i>Sorghum bicolor</i> L.	Cold Dry(15)	Der Haḍm, Ghaliẓ(15) Mughazzi(15)	Naffakh (flatulent), Qabiz (15)	Arq

Table 5: Classification of Various Kinds of Vegetables and their Dominant Rukn

S. No.	Common Name	English Name	Botanical Name	Mizāj (Constitution)	Istihalah (Transformation)	Action	*P. Dominant Rukn
1	Chaulāṭ	spiny pig weed	<i>Amaranthus spinosus</i> L.	Cold Moist(34), Hot1Dry(15)	Der Haḍm (34), Zood Haḍm(15)	Dāfi' Zahr (antidote), Dāfi' Fasad-i-Balgham, Ṣafrā' wa Dam(15)	Arq
2	Chaukā Sāg	Sorrel (30)	<i>Rumex vesicarius</i> L. (11)	Cold1 Dry1(34), Cold1 Moist1(15)		Musakkin-i- Ṣafrā'(calmlative effect on bile)(34, 15), Mushtahi(34), Qabiz,Habis-i-Dam (hemostyptic)(15)	Arq
3	Hummāz	Sorrel (30)	<i>Rumex vesicarius</i> L. (11)	Cold2 Dry2(34, 15)		Nafi' Ṣafrā'(beneficial for bile)(15)	Arq
4	Karnab	Cabbage	<i>Brassica olerace</i> L. (38)	Hot1Dry2 (34,15), Hot1 Dry1(28)	Der Haḍm (15) Sawdā'(16, 15)	Naffakh (flatulent), Mulayyin, Musaddid(15)	Nār

S. No.	Common Name	English Name	Botanical Name	Mizāj (Constitution)	Istihalah (Transformation)	Action	*P. Dominant Rukn
5	Salaq/ Chuq-andar		<i>Beta vulgaris</i> L. (38)	Hot1Dry1 (15,28)	Der Haḍm(28) Radi (morbid), Ghalīẓ Khilṭ (34, 15)	Jalī, Naffakh (flatulent), Muhallil(15)	Nār
6	Fuji/ Mūlī	Radish (1)	<i>Raphanus sativus</i> L. (1)	Hot1 Moist1(34, 15), Hot2 Dry2(28)	Der Haḍm Ghaleezul jawhar (filthy)(16)	Muwallid-i-Riyāh(34, 15, 28), Haḍim(15), Muwallid-i-Balgham (producer of phlegm) (34, 15)	Arḍ
7	Arvī	Antiquorum (9)	<i>Colocasia esculenta</i> (L.) Schott.	Hot1 Dry1(34), Hot Dry(15)	Der Haḍm, Ghalīẓ(15) Sawdā'(15)	Naffakh(34, 15), Muwallid-i-Balgham wa mani(15)	Arḍ
8	Soyā	Dill(30)	<i>Anethum sowa</i> Roxb. (6)	Hot2Dry2 (15,28), Hot2 Dry1(34)	Der Haḍm, Ghalīẓ(28)	Muhallil-i-Riyāh (15,28), Haḍim(15)	Nār
9	Khas/ Kāhū	Cuscut Grass (30)	<i>Andropogon muricatus</i> L. (30)	Cold2Moist2 (34, 15, 28)	Sarī' al-Haḍm, Muwallid-i-Dam (haemopoietic), Ghidhā'-i-Mahmood (28)	Mufarreḥ wa Muqawwi-i-Qlb wa Dimagh wa Meda(15), Munawwim (hypnotic)(28)	Mā'
10	Gājar/ Gazar	Carrot (2)	<i>Daucus carota</i> L. (2)	Hot Moist(16), Hot1Moist1 (15), Hot2 Moist2 (28)	Sarī' al-Haḍm(15) Asīr al-Haḍm (16,28)	Mulattif (demulscient(4)), Muqawwi-i-Meda wa Bāh (15), Naffakh, Mughazzi(28)	Ha-wā'

S. No.	Common Name	English Name	Botanical Name	Mizāj (Constitution)	Istihalah (Transformation)	Action	*P. Dominant Rukn
11	Began	Brinjal (23)	<i>Solanum melongena</i> L. (23)	Hot Dry(16), Hot2Dry2(15)	Der Haḍm (28), Muwallid-i-Sawdā' (16, 15, 28), Khlīṭ Ghalīṭ(15)	Musaddid(16, 15), Naffakh(28)	Arḍ
12	Qara' Lokī	Bottle Gourd	<i>Lagenaria siceraria</i> (Molina) Standl.	Cold2Moist2 (15, 28)	Sarī' al-Haḍm (15, 28), Muwallid-i-Balgham wa Sawdā' (15)	Musakkin-i- Ṣafrā' (15) wa Atsh (thirst sedative) (15, 28)	Mā'
13	Shaljam	Turnip (11)	<i>Brassica rapa</i> L. (11)	Hot2Moist1 (15, 28)	Der Haḍm (15, 28), Ghalīṭ, Kathīr al-Ghidhā' (28)	Muwallid-i-Mani(15), Naffakh (28)	Ha-wā'
14	Gobhī	Cauli Flower	<i>Brassica oleracea</i> L.	Hot1Dry2(15)	Muwallid-i-Dam-e-Radi Sawdā'wi, Kathīf (15)	Naffakh, Qabiz, Muhallī(15)	Arḍ
15	Kathal/ Chikki	Indian Jack Tree (23)	<i>Artocarpus heterophyllus</i> L. (23)	Hot2Dry1(15)	Der Haḍm, Muwallid-i-Dam-i-Ghalīṭ Sawdā'wi(15)	Naffakh, Muniz-i-Zakar (penile excitant)(15)	Arḍ
16	Tura'ī	Luffa	<i>Lagenaria aegyptiaca</i> L.	Cold Moist(15)	Sarī' al-Haḍm(15)	Musakkin-i- Ṣafrā', Dāfi' Fasād-i-Dam wa Ṣafrā' wa Balgham(15)	Mā'

S. No.	Common Name	English Name	Botanical Name	Mizāj (Constitution)	Istihalah (Transformation)	Action	*P. Dominant Rukn
17	Kaddū (Round)	Pumpkin(38)	<i>Benincasa hispida</i> (Thunb.) Cogn. (11)	Cold Moist(15)	Muwallid-i-Balgham, Saqeel (15)	Dāfi' Şafrā' (15)	Mā'
18	Tindā	Apple Gourd	<i>Benincasa fistulosa</i> (stocks) H.S & S.S.R	Cold Moist(23)		Mudirr-i-Baul, Naffakh, Mulayyin(23)	Mā'
19	Karelā	Bitter Gourd (7)	<i>Momordica charantia</i> L. (7)	Hot3Dry3 (15, 18)		Muhallili-i-Balgham (phlegmatic resolvent) wa Riyāh Muqawwi-i-Bāh (aphrodisiac(4)) (15, 18)	Nār
20	Bhindī	Lady Finger (30)	<i>Hibiscus esculent-tus</i> L. (30)	Cold(15)	Der Haḍm, Muwallid-i-Balgham(15)	Muwallid-i-Mani, Naffakh, Mughalliz (inspissant(38))(15)	Mā'
21	Parwal	Pointed gourd	<i>Trichosanthes dioica</i> Roxb. (23)	Hot1Moist2 (18)		Dafi' Fasād-i-Akhlāt-i-Thalāthā, Muqawwi-i-Qalb wa bāh, Mushtahi(18)	Ha-wā'
22	Aalū	Potato (30)	<i>Solanum tuberosum</i> L. (30)	Hot/Cold Dry(15)	Der Haḍm, Muwallid-i-Balgham(15)	Naffakh, Muwallid-i- Mani(15)	Arḍ
23	Zamīn Qand/ Sūran	Elephant foot yam	<i>Amorphophallus paeoniifolius</i> (Dennst.) Nicolson	Hot Dry(15)	Der Haḍm, Muwallid-i-Şafrā', Qaleelul Ghidhā' (15)	Mushtahi, Musaddid, Muqawwi-i-Bāh (aphrodisiac(4)) (15)	Arḍ
24	Shakar Qand	Sweet Potato (23)	<i>Ipomoea batatas</i> Lam.	Hot Moist (15)	Der Haḍm, Saqeel, Qaleelul Ghidhā' (15)	Musaddid, Muwallid-i-Mani(15)	Ha-wā'

S. No.	Common Name	English Name	Botanical Name	Mizāj (Constitution)	Istihalah (Transformation)	Action	*P. Dominant Rukn
25	Sehjanā	Bean Oil Tree (38)	<i>Moringa oleifera</i> Lam. (1)	Hot3Dry3(1)Hot Dry(18)	Muwallid-i-Şafrā'(18)	Mushtaḥī, Muhallil(1), Mudirr-i-Baul,Dafi' Balgham(18)	Nār
26	Pālak	Spinach (30)	<i>Spinacia oleracea</i> L. (30)	Cold1Moist1 (15) Cold2Moist2 (28)	Sarī' al-Haḍm (15,28), Jayyidul Ghidhā' (good chyme food)(15)	Dāfi' Qabz, Musakkin-i- Şafrā', Naffakh(15)	Mā'
27	Bathwā	Goo's Foot Plant (30)	<i>Chenopodium album</i> L. (30)	Cold1Moist2, Cold1 Moist1 (15)	Sarī' al-Haḍm, Muwallid-i- Khilṭ Şālih (healthy humour)(15)	Mulattif, Muhallil Dāfi Qabz(15)	Mā'
28	Methī Sāg	Fenugreek (2)	<i>Trigonella foenum-graecum</i> L. (2)	Hot2Dry2(15)	Sarī' al-Haḍm (15)	Munzij (concoctive), Muhallil, Mulayyin (laxative)(15)	Nār
29	Lobiya	Blackeyed pea	<i>Vigna unguiculata</i> subsp.	Cold Dry(16), Hot1 Moist2(15), Hot1Moist1 (28)	Der Haḍm (15,28), Ghalṭz (16,15), Muwallid-i-Khilṭ Ghalṭz (15), Muwallid-i-Khilṭ Balghami, Mughazzi(16)	Naffakh(15,28), Muwallid-i-Mani, Jalī, Muhallil(15)	Ha-wā'
30	Kāsnī	Chicory	<i>Cichorium intybus</i> L. (38)	Cold1, Moist1(15)		Musakkin-i- Şafrā', Mufattih (deobstruent), Nafi' Kabit-i-Har(beneficial for hot liver)(15)	Mā'

S. No.	Common Name	English Name	Botanical Name	Mizāj (Constitution)	Istihalah (Transformation)	Action	*P. Dominant Rukn
31	Sem	Flat Been (23)	<i>Dolichos lablab</i> L. (23)	Cold Dry(18)	Der Haḍm (18)	Muqawwi-i-Bāh, Naffākh(18)	Arḍ
32	Chichindā	Snake gourd	<i>Trichosanthes cucumerina</i> L.	Cold Moist(18)	Der Haḍm (18)	Naffākh, Hāḍim, Mushtahi, Musakkin-i-Atsh(18)	Mā'

Table 6: Classification of Various Kinds of Fruits and their Dominant Rukn

S. No.	Common Name	English Name	Botanical Name	Mizāj (Constitution)	Istihalah (Transformation)	Action	*P. Dominant Rukn
1	Aadū/ Khokh	Peach (23)	<i>Prunus persica</i> (L.) Batsch	Cold2Moist1 (34), Cold2 Moist2(15,28), Cold Moist(17)	Der Haḍm (34,28), Saqeel, Radiul Kaymūs(34), Ghalīz (16,15)	Muwallid-i-Balgham(15,28)	Mā'
2	Aamlā	Indian Gooseberry(5)	<i>Phyllanthus emblica</i> L. (5)	Cold Dry2(34), Cold1Dry2 (15)		Musakkin-i-Harart-i-Dam(calmative effect on blood) (34,15), Wa Ṣafrā'(15), Mukhrīj-i-Sawdā' Wa Balgham(15)	Mā'
3	Za'rūr	Hawthorn berries	<i>Crataegus monogyna</i> Jacq.	Cold Dry(16), Cold2Dry1 (15)	Der Haḍm (15)	Musakkin-i- Ṣafrā'(16,15), Qabiz (15)	Arḍ
4	Lemūn	Lemon (30)	<i>Citrus lemon</i> L. (30)	Cold1Dry1 (34) Cold3Dry3 (15)	Der Haḍm (15)	Musakkin-i- Ṣafrā'(34,15), wa Dam (34)	Mā'

S. No.	Common Name	English Name	Botanical Name	Mizāj (Constitution)	Istihalah (Transformation)	Action	*P. Dominant Rukn
5	Kelā/ Mauz	Banana (11)	<i>Musa paradisiaca</i> L. (11)	Hot Moist(16), Hot1Moist1 (15)	Der Haḍm, Muwallid-i-Dam-i-Ghalīz Balghami(15)	Naffakh(15), Mughazzi(34)	Mā'
6	Nabaq/ Ber	Chinese Date(38)	<i>Zizyphus jujuba</i> Lam. (38)	Cold Dry(34), Cold1Dry1 (15)	Der Haḍm 34,15), Ghalīz (34)	Dāfi'Safrā' (remover to bile), Qabiz(15)	Arq
7	Nārangī	Mandarin(11)	<i>Citrus reticulata</i> Blanco (11)	Cold2Dry2(34) Cold2Moist2 (15)		Musakkin-i-Šafrā' wa dam(15)	Mā'
8	Safarjal/ Behī	Quince (2)	<i>Cydonia oblonga</i> Mill. (2)	Cold1Dry2 (34) Cold1Moist1 (15), Cold2Dry 2(28)	Der Haḍm (15,28), Muwallid-i-Dam-i-Šālih (healthy blood) (15)	Mubarrid (refrigerant) Mughalliz (inspissant(38))(17), Qabiz(15), Musakkin-i-Qai(anti-emetic) (28)	Arq
9	Anjīr/Tin	Fig(2)	<i>Ficus carica</i> L. (2)	Hot Moist(34, 15), Hot1(28)	Der Haḍm (16), Zood Haḍm (15,28),Muwallid-i-Dam(15)	Mulayyin(15,28), Mughazzi(15,28)	Ha-wā'
10	Shahtūt (White)	Mulberry(30)	<i>Morus alba</i> L.	Hot Moist(34), Hot1Moist1 (15)	Muwallid-i-Dam-i-Šālih (healthy blood)(15)	Mufatteh-i-Sudad (deobstruent)(15)	Ha-wā'

S. No.	Common Name	English Name	Botanical Name	Mizāj (Constitution)	Istihalah (Transformation)	Action	*P. Dominant Rukn
11	Shahtūt (Black)	Mulberry(30)	<i>Morus indica</i> L. (30)	Cold Moist(15)	Sarī al-Haḍm(15)	Qabiz, Musakkin-i- Ṣafrā' wa Dam (15)	Mā'
12	Imlī/ Tamar Hindī	Tamarind(30)	<i>Tamarindus indica</i> L. (30)	Cold2Dry2 (34, 15)	Laṭīf(15)	Qatī'e Ṣafrā'(34, 15), Musakkin-i-Dam(15)	Arḍ
13	Līchī	Lychee	<i>Litchi chinensis</i> sonn.	Cold2Moist2 (18)		Mufarreh, Muqawwi-i-Qalb wa Dimāgh(18)	Mā'
14	Aam (Pukhtah)	Mango (7)	<i>Mangifera indica</i> L. (7)	Hot2Moist2 (15)		Muqawwi(tonic), Mughazzi, Musaffi-i-Dam (blood purifier) (15)	Ha-wā'
15	Aam (Ghair Pukhtah)	Mango (7)	<i>Mangifera indica</i> L. (7)	Cold1Dry1 (15)	Muwallid-i-Sawdā'(15)	Musakkin-i- Ṣafrā'(15)	Arḍ
16	Anannās	Pine Apple (30)	<i>Ananas comosus</i> Merr. (30)	Cold2Moist2 (15)		Muqawwi-i-A'ḍā' Raeesah (tonic for vital organs), Musakkin-i- Ṣafrā', Mughazzi(15)	Mā'
17	Amrūd	Guava (30)	<i>Psidium guajava</i> (30)	Hot1Moist1 (15)		Mufarreh wa Muqawwi-i-Qalb(cardiac tonic), Dāfi' Ṣafrā' wa Balgham-i-Lazij(remover of bile & viscous phlegm) (15)	Ha-wā'
18	Papītā	Papaya	<i>Carica papaya</i> L. (30)	Hot3Dry3(15)		Dāfi' Qai Balghami wa Haizah (beneficial for phlegmatic vomiting and cholera)(15)	Nār

S. No.	Common Name	English Name	Botanical Name	Mizāj (Constitution)	Istihalah (Transformation)	Action	*P. Dominant Rukn
19	Angūr (Shīrīn)	Grape (38)	<i>Vitis vinifera</i> L. (38)	Hot Moist(16), Hot1Moist1 (15,28)	Sarī' al-Haḍm (16,15,28), Muwallid-i-Dam Ṣālih, Kathīr al-Ghidhā'(15), Laṭīf (16) wa Ṣālih Ghidhā' (healthy humour.) (16,28)	Mulayyin, Musammin (adipogenous)(28),	Ha-wā'
20	Anār (Shīrīn)	Pomegranate (2)	<i>Punica granatum</i> L. (2)	Cold Moist(16), ColdMoist1 (15) Hot(28)	Laṭīf, Ṣālih al-Kaymus (healthy humour), Qaleelul Ghidhā', Muwallid-i-Dam Ṣālih (15)	Mulayyin(15), Naffakh (flatulent)(15,28), Mughazzi, Murattib (humectant)(38))(28)	Mā'
21	Seb	Apple	<i>Malus sylvestris</i> Mill. (38)	Cold Moist (16,28) Hot1Moist2 (15)	Muwallid-i-Balgham(15)	Naffakh (flatulent)(16,15), Mufarreh, Muqawwi-i-Qalb(cardiac tonic) wa Dimagh wa Jigar (hepatotonic) wa Meda(15)	Ha-wā'
22	Nāshpātī	Pear	<i>Pyrus pyrifolia</i> (Burm. f.) Nakai	Cold Dry(16,28), Motadil Moist2(15)	Der Haḍm, Muwallid-i-Khilt Jayyid (healthy humour)(15)	Qabiz(16,15)	Mā'

S. No.	Common Name	English Name	Botanical Name	Mizāj (Constitution)	Istihalah (Transformation)	Action	*P. Dominant Rukn
23	Zardālū/ Mishmish	Apricot	<i>Prunus armeniaca</i> L.	Cold Moist(16), Cold2Moist2 (15,28)	Der Haḍm (15), Radi al-Kaymūs (16,28), Muwallid-i-balgham(15)	Musakkin-i-Şafrā'(16,15), wa Dam(15)	Mā'
24	Aalū Bukhārā	Prunus (30)	<i>Prunus domestica</i> L. (30)	Cold Moist(16), Cold2Moist2 (15,28)	Qaleelul Ghidhā' (16,15)	Musakkin-i-Şafrā'(16,15,28), Mushil (pergative)(16,15,28)	Mā'
25	Kharbūz	Sweet Melon (38)	<i>Cucumis melo</i> L. (38)	Hot Moist(16), Cold2Moist2 (15)	Laṭīf(17,15), Muwallid-i-Khiṭ Raqeeq Mai (watery humour) (15)	Jalī, Mufattiḥ (deobstruent)(15)	Mā'
26	Turanj	Citron (38)	<i>Citrus medica</i> L. (38)	Clod Moist(16)	Ghalīz, Der Haḍm(16)	Musakkin-i-Dam wa Şafrā', Muqawwi-i-Jigar wa Medā(18)	Mā'
27	Khīrā/ Khayar	Cucumber (1)	<i>Cucumis sativus</i> L. (1)	Cold Moist (16,28), Cold2 Moist2 (15)	Muwallid-i-Khiṭ Kham (morbid humour)(15) Wa Balgham-i-Lazij(28)	Mudirr-i-Şafrā' (cholagogue)(17), Musakkin-i-Şafrā' wa dam(15)	Mā'
28	Kakrī/ Qissā	Long Melon (11)	<i>Cucumis melo</i> (L.) (11)	Cold Moist(16), Cold2Moist2 (15), Cold3 Moist3(28)	Safī' al-Haḍm(15)	Musakkin-i-Şafrā' wa Dam wa Jigar (liver sedative)(15), Murattib (28)	Mā'

S. No.	Common Name	English Name	Botanical Name	Mizāj (Constitution)	Istihalah (Transformation)	Action	*P. Dominant Rukn
29	Unnāb	Jujube (30)	<i>Zizyphus vulgaris</i> Lam. (30)	Moderate (16), Moderate Dry (15)	Der Haḍm, Muwallid-i-Dam-e-Ṣālih (15)	Muaddil-i-Akhlāṭ-i-Ghalīẓā (equalisation of viscous humours), Musakkin-i-Dam (15)	Ha-wā'
30	Tarbūz/ Hindwana	Water Melon (30)	<i>Citrullus vulgaris</i> (L.) Schard (30)	Cold2Moist2 (34, 15, 28)	Sarī' al-Haḍm (28), Ghalīẓ al-Jawhar (17), Muwallid-i-Dam-i-Raqeeq (15)	Musakkin-i-Ṣafrā' Wa dam (15), Jalī' Mudirr-i-Baul (28)	Mā'
31	Mahuā/Gul Chiskan	Honey Tree	<i>Madhuca indica</i> G.F. Gmelin	Hot2Dry2 (15)		Muqawwi(tonic), Muwallid-i-Shīr (galactopoietic) wa Mani, Dāfi' Fasād-i-Ṣafrā' (15)	Nār
32	Ras Bhaīr	Cape gooseberry	<i>Physalis peruviana</i> L.	Cold Dry (15)		Musakkin-i-Ṣafrā' wa Sawdā', Mulayyin (15)	Arq
33	Bel	Bengal Quince (5)	<i>Aegle marmelos</i> (L.) corr. (5)	Hot1Dry2 (18)		Qābiz, Muqawwi-i-Qalb wa Dimāgh wa medā wa kabid (18)	Nār
34	Jāmun	Jamol (30)	<i>Syzygium cumini</i> (L.) skeels (7)	Cold2Dry3 (18)	Der Haḍm (18)	Naffākh, Muqawwi-i-Medā wa Kabid (18)	Arq
35	Sharfā	Sugarapple	<i>Annona squamosa</i> L.	Hot2Moist2 (18)	Der Haḍm (18)	Mulayyin, Naffākh, Muwallid-i-Dam-i-Balghami wa Sawdawi (18)	Ha-wā'

S. No.	Common Name	English Name	Botanical Name	Mizāj (Constitution)	Istihalah (Transformation)	Action	*P. Dominant Rukn
36	Gūlar/ Injeer Aadam	Cluster Fig(23)	<i>Ficus racemosa</i> L. (23)	Hot2Moist1 (23)	Radī al- Ghidhā' (15)	Muqawwi, Musakkin-i-Harārat,Mudirr-i-Baul(23)	Ha-wā'

Table 7: Classification of Different Kinds of Dry Fruits and their Dominant Rukn

S. No.	Common Name	English Name	Botanical Name	Mizāj (Constitution)	Istihalah (Transformation)	Action	*P. Dominant Rukn
1	Jawz/ Akhrot	Walnut (7)	<i>Juglans regia</i> L. (7)	Hot Moist(16), Hot2Dry1(15), Hot Dry(28)	Der Haḍm (12,8), Qaleelul Ghidhā', Metabolizes towards Ṣafrā' (15)	Muqawwi-i- A'ḍā' Raeesah (tonic to vital organs spl.Brain)(15)	Ha-wā'
2	Nāryal	Coconut (30)	<i>Cocos nucifera</i> L. (30)	Hot2Dry1(34)	Saqeel34,Der Haḍm, Muwallid-i- Dam-i-Jayyid (18)	Musammin, Muqawwi-i-Bāh(18)	Nār
3	Chilg- hozah	Edible Pine(38)	<i>Pinus gerardiana</i> Wall. (38)	Hot Dry(16), Hot2Moist1 (15)	Der Haḍm (34,15), Ghaltz Ghidhā' (34,15)	Mughazzi(16,15) Naffakh (flatulent)(15)	Ha-wā'

S. No.	Common Name	English Name	Botanical Name	Mizāj (Constitution)	Istihalah (Transformation)	Action	*P. Dominant Rukn
4	Khajūr/ Tamar	Dates (38)	<i>Phoenix dactylifera</i> L. (38)	Hot Dry(17), Hot1Moist1 (28)	Der Haḍm (28), Ghalīz (17,28), Radiul kaymūs(17)	Mughazzi, Muzayyid-i- Mani (spermatogenic) (28)	Ha-wā'
5	Chironjī	Buchanania Lanzan	<i>Buchanania lanzan</i> Spreng (7)	Hot2Moist1 (15)	Der Haḍm (34,15), Kathīr al-Ghidhā' (15)	Jalī, Muwallid-i-Mani(15)	Ha-wā'
6	Kishmish	Raisins (11)	<i>Vitis vinifera</i> L. (11)	Cold Dry(34), Hot2Dry1(15)	Kathīr al- Ghidhā' (15)	Mulayyin-i-Salabat, Muqawwi-i-Qalb (cardiac tonic) wa Jigar(15)	Arq
7	Lawz/ Badām	Sweet Almond (2)	<i>Prunus amygdalus</i> Batsch (2)	Moderate Moist (16,15), Hot Moist(17), Hot1 (28)	Der Haḍm (16,15,28), Saheel(16,28), Ghalīz, Qaleelul Ghidhā'(28), Dam-e-Ṣālih (healthy blood)(15,28)	Mughazzi(15)	Ha-wā'
8	Fistaq/ Pistā	Pistachia Nut(11)	<i>Pistacia vera</i> L. (11)	Hot2Moist2 (34,15) Moderate(28)	Der Haḍm (15)	Mughazzi, Muqawwi-i-Qalb wa Dimagh wa Meda(15)	Ha-wā'
9	Kajū	Cashew Nut(30)	<i>Anacardium occidentale</i> L. (30)	Hot Moist(15)	Muwallid-e- Ṣafra'(15)	Mughazzi, Muqawwi wa Mufarreh Qalb(15)	Ha-wā'
10	Munaqqā/ Zabīb	Dry Grapes (7)	<i>Vitis vinifera</i> L. (7)	Hot(5), Hot Moist(18)	Kathīr al- Ghidhā' (18)	Musammin, Muqawwi-i-Bāh wa Qalb(18)	Ha-wā'

S. No.	Common Name	English Name	Botanical Name	Mizāj (Constitution)	Istihalah (Transformation)	Action	*P. Dominant Rukn
11	Tālm-akhānā	Astracantha(30)	<i>Hygrophila auriculata</i> (Schume) Heine	Cold Moist(23)		Mudirr-i-Baul, Muqawwi, Mufarreh, Musammin(23)	Mā'
12	Mūng Phālī	Ground Nut(23)	<i>Arachis hypogaea</i> L. (23)			Mudirr-i-Laban, Mulayyin, Musammin(23)	Arq

Table 8: Classification of Meats of Different Kinds of Animals and their Dominant Rukn

S. No.	Common Name	English Name	Zoological Name	Mizāj (Constitution)	Istihalah (Transformation)	Action	*P. Dominant Rukn
1	Bakrī	Goat	Capra hircus(38)	Hot(16), Hot Moist(15)	Sarī' al-Hadīm (28), Kathīr al-Ghidhā', Jayyid al- Kaymus (healthy chyme food) (15), (without fat) Dam-i-Yabis (fatty) Dam-e-Ratab(16),	Mughazzi(16), Muwallid-i-Dam-i-Šālih (18)	Ha-wā'

S. No.	Common Name	English Name	Zoological Name	Mizāj (Constitution)	Istihalah (Transformation)	Action	*P. Dominant Rukn
2	Bail	Ox	Bos Taurus(38)	Dry(16), Hot3Dry3(15)	Der Haḍm, Dam-i-Ghalīz (15), Ghalīz, Kathīr al- Ghidhā', Dam-e- Sawdā'wi(16)	Naffakh (flatulent) (15)	Ard
3	Gāy	Cow	Bos taurus	Hot Dry(15), Cold Dry(28)	Der Haḍm (15,28), Ghalīz (15), dam- e-Sawdā'wi (15,28)	Mughazzi(15)	Ard
4	Bhains	Buffalo	Bubalus bubalis (L.)(37)	Hot(16), Cold Dry(15)	Der Haḍm (15), Ghalīz(16,15), Khit Sawdā'wi (16,15)	Naffakh, Nafi'Huzāi-i-Kulyā (18)	Ard
5	Hiran	Deer	Cervidae	Hot2Dry2(15), Cold1Dry2(28)	Sari' al-Haḍm, Qaleelul Ghidhā'(15), dam-i- Sawdā'wi(28)	Nafi'Yaraqān, Fālij, Istirkhā wa Amrād Asāb(18)	Nār
6	Bārah Singhā	Stag	Cervus duvacu- celi(38)	Hot3Dry3(15)	Der Haḍm, Ghalīz, Muwallid-i- Sawdā'(15)	Musakhkhin (calorific)(19, 15)	Nār

S. No.	Common Name	English Name	Zoological Name	Mizāj (Constitution)	Istihalah (Transformation)	Action	*P. Dominant Rukn
7	Khargosh	Rabbit	Oryctolagus cuniculus	Cold(16,34), Hot3Moist2 (15)	Ghalīz(1), Muwallid-i-Sawdā'(16, 15)	Dafī'Zahr, Nafī'fālij, Ra'shā wa Sara'(18)	Mā'
8	Tītar	Partridge	Fracoli-nus franco-linus asiae (Bona Parte)(36)	Hot Dry(15), Hot2Dry2(28)	Sarī' al-Haḍm(28), Muwallid-i-Dam-e-Ṣālih (15), Laṭīf(28)	Musakhkhin, Muḡawwi-i-Dimagh (brain tonic) (15)	Nār
9	Gorayyā	Sparrow	Passeridae	Hot Dry(16,28)	Khafeef(28)	Qabiz(28)	Nār
10	Baglā	Heron	Ardeidae	Hot Dry(16), Hot2Dry2(15)	Der Haḍm, Saqeel, Ghalīz, Khilṭ Radi(15)	Mughazzi(15)	Nār
11	Bater	Quail	Coturnix coturnix	Hot1Dry(15)	Muwallid-e-Dam(15)	Mughazzi, Muḡarrik Bāh-i-Niswan (Sexual tonic spl. in female)(15)	Nār
12	Batakh	Duck	Anas platyrhynchos	Hot(16), Hot2Moist1 (15) Hot Moist(28)	Der Haḍm (16, 15, 28), Ghalīz(16, 15) Muwallid-e-Dam(15) (Egg)Ghalīz, Der Haḍm (15)	Naffakh (flatulent)(15)	Ha-wā'

S. No.	Common Name	English Name	Zoological Name	Mizāj (Constitution)	Istihalah (Transformation)	Action	*P. Dominant Rukn
13	Sāras	Crane	Gruidae	Hot(16), Hot Moist(15), Dry(28)	Der Haḍm (15), Ghalīz(16), Muwallid-e-Sawdā' (15,28)	Dāfi' fasad-i- Ṣafrā' wa Dam(15)	Ha-wā'
14	Shutur Murgh	Ostrich	Struthio camelus	Hot3Dry3(15)	Der Haḍm (15), Ghalīz(16,15)	Muhalil-i-Riyāh, Dāfi' Balgham(15)	Arḍ
15	Murgh	Cock	Gallus domesticus (38)	Hot1Moist (15), Hot(28)	Laṭīf, Kathīr al- Ghidhā', Muwallid-i- dam-i-Ṣālih (15)	Mukhrij-i-Sawdā', Muḡawwi-i-Qalb wa Dimagh(15)	Ha-wā'
16	Murghī	Hen	Gallus gallus domesticus	Hot1Moist1 (28)	Sarī' al-Haḍm, Muwallid Khilt-i-Jayyid(28)		Ha-wā'
17	Murghābi	Wild-duck	A. crecca crecca (L.)(36)	Hot2Moist2 (15), Hot Moist(28)	Der Haḍm, Ghalīz(15)	Mughazzi, Muḡarrik-i-Bāh (sex stimulant)(15)	Ha-wā'
18	Mor	Peacock	Pavo cristatus	Hot2Dry2(15)	Der Haḍm, Ghalīz, Muwallid-i- Khilt-i-Ghalīz (15)	Muḡawwi-i-Medā wa Bāh(18)	Arḍ
19	Surkhāb	Ruddy goose	Chloephaga rubidiceps	Hot Moist(15)	Muwallid-i-Dam-i-Ghalīz(15)	Muḡawwi, Muḡarrik-i-Bāh(15)	Ha-wā'

S. No.	Common Name	English Name	Zoological Name	Mizāj (Constitution)	Istihalah (Transformation)	Action	*P. Dominant Rukn
20	Zor/ Mainā	Starling	Sturnidae	Hot Dry(15)	Muwallid-i-Dam(15)	Mushtahi (appetizer), Muqawwi-i-Dimagh(brain tonic), Basar(eye tonic) wa Bāh(15)	Nār
21	Oont/ Ibl	Camel	Camelus dromedarius (L.)(37)	Hot3Dry3(15), Hot Dry(28)	Der Haḍm, Ghalīz, Muwallid-i-Sawdā', Radiul kaymūs (15,28)	Muqawwi-e-Bāh wa A'dā' Raeesah(15)	Arḍ
22	Bhed	Sheep	Ovis ammon (L.) (37)	Hot Moist(15), Hot2Moist2 (28)	Sarī' al-Haḍm(15), Muwallid-i-Dam-i-Ṣaleh (15,28)	Muqawwi, Mughazzi(15,28) Naḥḥ (flatulent)(15)	Ha-wā'
23	Kekdā	Crab	Brachy-ura	Cold2Moist2 (18)	Der Haḍm, Kathīr al-Ghidhā'(18)	Mudirr-i- Baul wa Hayḍ (emmenagogue) Muqawwi-i- Bāh (18)	Arḍ
24	Jurād/ Tiddī	Locust	Dissost-eira carolina	Hot(34),Hot Dry(17), Hot2Dry2(15)	Ghalīz wa Radiul Kaymūs(17)	Mujaffif, Musaffi-i-Akhlāṭ Ghalīzā (purifier to viscous humours)(15)	Arḍ

S. No.	Common Name	English Name	Zoological Name	Mizāj (Constitution)	Istihalah (Transformation)	Action	*P. Dominant Rukn
25	Samak	Fish		(Fresh)Cold Moist(16,28), Cold1Moist2 (15)	(Fresh)Der Haḍm(16), Ghalīz(16), Akhlāt-i-Kham(16), Balgham-i-Radi(28), (Fresh & Old) Balgham(33), (Old)Lazij (vitreous) Ghalīz (33) (Egg)Der Haḍm(16,28), Ghalīz(16), (Fat)Ghalīz al-Jawhar (17)	(Fresh) Muqawwi-e-Bāh, Muwallid-i-Sheer wa Mani(15), Mubarrid (gastric refrigerant) wa Murkhhī Meda (gastric emollient) (28) (Egg) Mughallīz -i-Manī (inspissant to semen(4)), Mughazzi, Muqawwi(15)	Mā'
26	Rūbyān	Rubiyan Fish		Hot Dry(16),Hot Moist(17), (Fresh)Hot Moist(15)	Latīf(17), Muwallid-i-Sawdā'(34) Muwallid-i-Dam-i-Ṣaleh wa Mani(15)	Muqawwi-i-Bāh(15)	Ha-wā'
27	Kabūtar	Pigeon	Columbidae	Hot2Moist2 (28)	Muwallid-i-Dam-i-Ṣālih(18)	Musammin, Muqaww-i-Bāh(18)	Ha-wā'

S. No.	Common Name	English Name	Zoological Name	Mizāj (Constitution)	Istihalah (Transformation)	Action	*P. Dominant Rukn
28	Tīhūj			Moderate(28)	Sarī' al-Haḍm, Muwallid Dam-i-Ṣaleh(28)		Ha-wā'

Table 9: Meats of Different Parts of Animals and their Dominant Rukn

S. No.	Common Name	English Name	Mizāj (Cosnstitution)	Istihalah (Transformation)	Action	*P. Dominant Rukn
1	Sir	Head		Ghalīẓ(16)	Mughazzi(16)	Arḍ
2	Dimāgh	Brain	Cold(16), Cold Moist(15)	Der Haḍm(15), Muwallid-i-Balgham Lazij(vitreous), Dam-i-Sard, Akhlāt-i-Ghalīẓ(15)	Murkhi-i-Meda (stomach relaxant)(16), Muqawwi-i-Dimagh (brain tonic)(15)	Arḍ
3	Qalb	Heart	Hot(16), Hot Dry(15)	Der Haḍm(16,15,28), Ghalīẓ(16), Radi Ghidhā'(15)	Mughazzi(15,28), Muqawwi-i-Qalb(15)	Nār
4	Riyah	Lung	Cold(16), Cold Moist(15)	Der Haḍm(16,15,28)	Muwallid-i-Sawdā' (melanagogue) (15)	Mā'

S. No.	Common Name	English Name	Mizāj (Cosnstitution)	Istihalah (Transformation)	Action	*P. Dominant Rukn
5	Jigar	Liver	Hot(16), Hot Moist(15,18)	Der Haḍm (16,15,28,18), Ghalīz(16,15,18), Kathīr al-Ghidhā'(16,28,18)	Muwallid-i-Dam(haemopoietic)	Ha-wā'
6	Tihāl	Spleen	Cold (16), Cold1Dry2 (15)	Der Haḍm(15,28), Saqeel(16), Muwallid-i-Sawdā'(16,15,28,33), Radiul Kaymūs(16,15)	Hābis-i-Dam, Mudammil-i-Qurooh (cicatrizant(4))(15)	Arḍ
7	Kulyah	Kidney	Cold Dry (15,28)	Der Haḍm(16,15,28), Muwallid-i-Dam-i-Radi(16,28), Radiul Ghidhā'(15)	Muqawwi-i-Gurda wa Kamar(tonic for kidneys & lumber region)(15)	Arḍ
8	Meda wa Aa'nt	Stomach & Intestine	(Stomach) Hot Moist(10) Cold(28) (Intestine) Cold2Dry2(15) Cold(28)	Der Haḍm(16,15,28), Muwallid-i-Dam-i-Radi(16,15),Qaleelal-Ghidhā'(15,28)	Naffakh(flatulent)(15) Murattib(33)	Arḍ

S. No.	Common Name	English Name	Mizāj (Cosnstitution)	Istihalah (Transformation)	Action	*P. Dominant Rukn
9	Pistān	Breast	Cold(16), Cold Moist(15)	Der Haḍm, Ghalfz, Kathīr al-Ghidhā'(16), Ṣālih al-Ghidhā' (healthy diet)(15)	Mudirr-i-Shīr wa baul(18)	Mā'
10	Potā	Bird's Stomach	Hot Moist(10)	Kathīr al- Ghidhā', Muwallid-i-Dam-i-Ṣālih (15)	Muqawwi-i-Jigar(hepatotonic) (15)	Ha-wā'
11	Pāyah	Legs	Cold(16), Hot Moist(15), Moist(28)	Der Haḍm, Muwallid-i-Dam-e-Ṣālih(15), Sarī' al-Haḍm(28)	Muhallil(resolvent), Dāfi' Qabz(15)	Mā'
12	Mukh	Marrow	Hot(34), Hot Moist(16), Cold Moist(28)	Kathīr al-Ghidhā'(18)	Mughassi(nauseant)(28) Murakkhhi(relaxant) (16,28)	Ha-wā'
13	Shahm	Fat	Hot Moist(15)	Sarī' al-Haḍm(15), Muwallid-i-Balgham(15,28) wa Ṣafrā' wa Dam-i-Radi(15)	Muhallil-i-Waram(anti-inflammatory), Muqawwi-i-Bāh(15)	Ha-wā'
14	Zabān	Tongue		Ghalfz(28)	Muzayyid-i-Manī(18)	Arq

Table 10: Milk and its Products and Dominant Rukn

S. No.	Common Name	English Name	Mizāj (Constitution)	Istihala (Transformation)	Action	*P. Dominant Rukn
1	Māst/ Dahī	Curd	Cold(16), Cold Moist(17), Cold2 Moist2(15), Cold Dry(15)	Der Haḍm(15,28), Muwallid-i-Khiliṭ Radi(28)	Murattib, Qabiz(15)	Mā'
2	Makhīz/ Chhāchh	Butter Milk(4)	Cold(16), Cold2 Moist2(15,18)		Mushtahi, Musakkin-i-dam(15,18)	Mā'
3	Zabad	Butter	Hot Moist(16,28), Cold Moist(17), Hot1 Moist1(15)	Der Haḍm(16)	Mulayyin, Murakkhhi (15,28) Muhalil, Mughazzi(15)	Ha-wā'
4	Ghī	Fat	Hot(16,28), Hot1 Moist1(15)	Ghalīz, Kathīr al-Ghidhā'(16)	Mughazzi(15,28), Mulayyin(15), Murakkhhi(16)	Ha-wā'
5	Panīr	Cheese	(Fresh)Cold Moist(16,17), Cold2Moist2(15) (Old)Hot Dry(16), Hot2Dry2(15)	(Fresh)Der Haḍm(15,28), Ghalīz(16), Muwallid-i-Khiliṭ Ghalīz(17,33) (Old)Der Haḍm(16), Ghalīz(33)	(Fresh)Mughazzi(16,28), Muwallid-i-Balgham, Sawdā'(15) (Old)Muwallid-i-Ṣafrā'(16), Jalī, Mujaffif(15)	Arḍ
6	Labba'/ Peusī		Cold(16), Cold1 Moist1(18)	Der Haḍm(28) Ghalīz(16,28)	Musammin, Naffakh, Muharrk-i-Bāh(18)	Mā'

S. No.	Common Name	English Name	Mizāj (Constitution)	Istihala (Transformation)	Action	*P. Dominant Rukn
7	Laban	Milk	Moderate Moist(16)	(Cow)Ghalīz (16,15), Der Haqm(16) (Goat)Şālih Ghidhā'(17) (Sheep)Ghalīz (17,28) (Camel)Raqqeq (28) (Buffalo) Ghalīz (15)	(Goat)Murattib(17,28), Mulayyin(28) (Sheep)Muwallid-i-Balgham(28) (Cow)Mulayyin, Mughazzi(28) (Camel)Mus'hil, Mughazzi(28) (Buffalo)Mulayyin, Murattib Mughazzi(28)	Mā'
8	Masal		Cold(16,28), Cold Dry(34)		Musakkin-e- Şafra' (16,15,28), Mukhrij-i-Khiṭ Muhtraq(remove of burnt humour) (15)	Mā'

Table 11: Eggs of Various Kinds of Birds and their Dominant Rukn

S. No.	Common Name	English Name	Mizāj (Constitution)	Istihala (Transformation)	Action	*P. Dominant Rukn
1	Murghī	Hen	Moderate(16), Hot Moist(15)	(Yock)Sarī al-Haḍm(16), Kathīr al-Ghidhā'(15), Ṣālih al-Kaymūs(healthy humour)(15,28) (White) Der Haḍm, Ghalīz(16,28) (Deep Boiled)Der Haḍm, Ghalīz(16)	(Yock)Mughazzi(16), Muqawwi-i-Qalb wa Dimagh wa Bāh(15) (White)Muwallid-i-Khiṭ Kham Lazij (pro-creator of morbid and viscous humour)(15)	Hawā'
2	Batakh	Duck		Der Haḍm, Ghalīz (16,15) Kathīr al-Ghidhā' (16)	Muwallid-i-Fuzlat (pro-creator of morbid material)(28)	Arq
3	Kabūtar	Pigeon	Hot Dry(15)		Muhassin-i-Laun (complexon enhancer) (15)	Nār
4	Mor	Peacock		Ghalīz(17)		Arq
5	Gorayyā (waghayrah)	Sparrow & Other Birds	Hot(16), Hot2Dry2(18)	Ṣālih Ghidhā'(18)	Muqawwi-i-Bāh, Mun'z, Muzayyid-i-Manī(18)	Nār

Table 12: Various Kinds of Compound Diets and their Dominant Rukn

S. No.	Common Name	English Name	Mizāj (Constitution)	Istihala (Transformation)	Action	*P. Dominant Rukn
1	Aash-e-Jao	Barley water	Cold Moist(15)	Sarī al-Haḍm, Muwallid-i-Khiṭ Ṣāliḥ, Motadil Ghidhā'(15)	Naffakh (flatulent)(15)	Mā'
2	Sawīq/ Sattū	Parched barley meal	(Wheat)Hot1 Dry1(15) (Barley)Cold2 Dry2(15), Cold1 Dry2(28) (Gram)Moderate (15)	(Wheat) Sarī al-Haḍm(15)	(Wheat)Dāfi Hararat (cooler)(15), Naffakh (flatulent), Mughazzi(28) (Barley)Dāfi Hararat(15), Naffakh (flatulent)(15,28) (Gram)Muqawwi-i-Meda(stomachic) Dāfi' Matli, Qai wa Dasṭ(anti-emetic, nausea and diarrhoea)(15)	Ha-wā'
3	Marī/ Aabkāmā	Pickled carrot gruel	Hot1 Dry1(28)		Jaī Mulayyin(28)	Nār
4	Shakar	Sugar	Hot2 Dry2(15), Hot1(28)		Mulayyin, Muhallil (15,28)	Nār
5	Shahad/ Asl	Honey	Hot2 Dry1(15) Hot2 Dry2(28)		Jaī (15,28), Munaqqi-i- Balgham Lazij(remove of viscous phlegm)(15), Qati'e Mawad-i- Ghalīẓ wa Lazij (remover of viscous material)(28)	Nār

S. No.	Common Name	English Name	Mizāj (Constitution)	Istihala (Transformation)	Action	*P. Dominant Rukn
6	Fanīz/ Batāshā	Sugar drop candy	Hot Moist(15) Hot(28)	Muwallid-e-Dam-i-Sāleh(15)	Mulayyin(15,28),Jalī, Muqawwi-i-Jigar (hepatotonic)(15)	Ha-wā'
7	Khal/ Sirkah	Vinegar	Cold2 Dry2(15) Cold Dry3(28)	Latīf, Muwallid-i-Sawdā'(28)	Haḍīm, Mushtahi(15), Qatī'e Mawad-i-Lazij(28)	Mā'
8	Harīrā	Meat soup		Der Haḍīm, Muwallid-i-Dam Ghalīz(28)		Arq
9	Yakhnī	Stew of meat		Sarī' al-Haḍīm	Mulayyin, Muwallid-i- Lahm layyin (pro-creator of soft tissue)	Ha-wā'
10	Mā'ul Asl	Honey water	Hot Moist(15)		Jalī, Mulayyin, Qatī'e Akhlāt-i-Lazij(15)	Ha-wā'

*Probable Dominant Rukn

Vinegar and Sumāq are very much beneficial in the treatment of bilious diarrhoea. (1)

Brain of all animals is moist. (1)

Mithālī Ghidhā’ (Ideal Diet)

Since the constitution, age, sex, habitate, habit, occupation etc. of individuals are different, it is difficult to indicate or identify the “Ideal Diet” which would be beneficial and suitable to all. It’s a little naive to imagine that there is single “Ideal Diet” that works for everyone. For good nutrition, all necessary or essential substances (organic and inorganic) in sufficient quantities should be available in an “Ideal Diet”. If any type of nutrient is deficient in the food for one or two times or one day, it should be replenished on the next day. If the quantities of nutrients are deviated (excess or less in quantity) and consumed for a long time, it leads to Anaemia, Obesity, Osteoporosis, Osteoarthritis, Hypoproteinaemia, Hyperproteinaemia, scurvy, Night Blindness, Sanguin Fever and several skin diseases like Beri Beri, Vitiligo and Discolorations. There is no diet which fulfills all the criteria of an ideal diet. For example; milk is deficient in Iron, meat is deficient in Calcium and Bread is deficient in *Mawād-i-Lahmiyah* (proteinous substances) (Qarshi 2011).

Conclusion

Proper understanding of diets on the basis of constituent components may unfold many facets of research and orientation which would help in conceiving the plan of diets for various diseases and different stages of life.

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सारांश

प्राथमिक घटकों (अरकान) के आधार पर आहार पदार्थों का यूनानी वर्गीकरण

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प्रत्येक चिकित्सा पद्धति का फार्माकोथेरेपी के सिद्धांतों और तत्वज्ञान को समझने का अपना तरीका होता है और यह आहार के लिए भी सत्य है। आहार मानव शरीर का एक मूल पोषण है और स्वास्थ्य में महत्वपूर्ण भूमिका निभाता है। कई नए रोगों के प्रकोप यूनानी चिकित्सकों एवं विद्वानों को आश्चर्यचकित करते हैं। अनुसंधान के कई क्षेत्रों में आहार को केंद्र-बिन्दु के रूप में लिया गया है। यूनानी चिकित्सा ने हमेशा आहार द्वारा उपचार का समर्थन किया क्योंकि रोग मात्रात्मक या गुणात्मक रूप से ह्यूमर्स असंतुलन का परिणाम है। ह्यूमर्स आहार का उप-उत्पाद है जो चार अरकान का अंतिम रूप है। आहार में अरकान की मात्रा भिन्न-भिन्न होती है इसीलिए वे विभिन्न प्रकार के मिज़ाज पैदा करते हैं और भिन्न-भिन्न प्रकार के स्वभाव रखते हैं। कोई भी आहार शरीर और जीवन के सभी चरणों में एक समान प्रभाव पैदा नहीं करता है। इसलिए विभिन्न रोगों, शरीर और जीवन के विभिन्न चरणों के लिए एक विशेष आहार दिया जाता है क्योंकि शरीर में विसर्जन लगातार होता है। विसर्जन का प्रभाव शरीर में हर समय एक-सा नहीं रहता। कभी-कभी 'रुक्न' का विसर्जन दूसरे के प्रतिकूल अधिक होता है। इन अवस्थाओं में शरीर को नुकसान से निपटने के लिए प्रत्याहार की आवश्यकता होती है। इन चीज़ों को ध्यान में रखते हुए प्राथमिक घटकों के आधार पर आहार पदार्थों को वर्गीकृत करने के लिए इस पेपर में एक प्रयास किया गया है।

शब्द कुंजी: अरकान, घटक, आहार, मिज़ाज



An Explanatory Study on *Tabiyat* and *Nafs* as Natural Powers of Body

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Abstract

Unani system of medicine or *Tibb* has very crucial concept of faculties as *Tabiyat* and *Nafs*. The significance of this study is that it reveals the comprehensive work of physicians of the past era on the topic of natural faculties. This study concludes that the functions of *Tabiyat* are related to growth, nourishment and reproduction while *Nafs* is found as a stimulator or initiator of all the desires and movements of the body. It is not related to living things only or life but related to motion, hence all the celestial bodies like moon, stars, etc. are moving due to their own *Nafs* without having life. This study also evaluates the *Tadābīr* (interventions) and compares the difference between *Tabiyat* and *Nafs*.

Keywords: Celestial bodies, *Nafs*, Natural power, *Tabiyat*

Introduction

The word *Tabiyat* has its route in Greek philosophy where Aristotle used the word *phusis/physics* for the natural faculties. The Arabic philosophers have used the synonym of *physis* as *Tabiyat*. Thus, the word physics, physiology and physicians have been derived from *physis/phusis*. According to Hippocrates; *Tabiyat* refers to an administrative faculty which works for the welfare of human body involuntarily and unconsciously and it becomes the source of all motions and rest. But there is a point of query that if a person has the tendency to commit suicide then which faculty is responsible behind this act? Since, this act is not for the welfare of the body, so definitely there is another power which stimulates the suicidal tendency. Philosophers have given the answer that *Nafs* (anima or soul) is a stimulant or initiator of everything which is in motion or apt to move.

What is *Tabiyat*?

According to Aristotle; *Tabiyat* is an administrative faculty which governs the human body involuntarily and unconsciously (Jilani; 1998).

According to Aflatoon; *Tabiyat* is a God gifted power which is renowned for the betterment and equitability of the body (Arzani; 2010).

According to Majusi; *Tabiyat* is the administrator of the body. When it is powerful enough to withstand the disease, it does not require the aid of physician. The evidence is that the minor wounds in most cases heal without treatment, many painful conditions subside after sleep and many pains are soothed without medications.

According to Masihi; *Tabiyat* is a faculty which governs the body involuntarily and takes the action suitable to the body.

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According to Galen; When the word *Tabiyat* is spoken it refers to *Quwwat-e-Mudabbir badan* which means the supreme planner of the body (Jalinus; 2008).

According to Razi (2000); *Tabiyat* is solely responsible for the performance of all physiological functions of the body.

Tadābīr of Tabiyat and Nafs

Majusi (2010) says that *Tabiyat* and *Nafs* are the things through which *Tadbīr* of animals and plants take place. *Tadbīr* is referred to as an appropriate and careful technique or intervention to perform any special task or work. The functions of *Tabiyat* are *Tawīd* which means genesis or functions belonging to birth, *Numū* means growth and *Taghdhiyah* means nourishment of the body. The functions of *Nafs* are those by which *Ḥayāt* (life) is maintained and some functions are related to power of intellect and some related to perception and voluntary movement.

Nafs and Its Kinds

Nafs is a power of all the natural animate bodies, so called as anima. The various animate objects of this world like plants, animals and human are supposed to be endowed with a self directing purposeful force which enables the activity and functions appropriate to the purpose of creation.

Philosophers believe that *Nafs* (anima, soul) is of two kinds.

(i) *Nafs-i-Falakī* (celestial soul) and (ii) *Nafs-i-Ardī* (soul of earthy object) (Kabiruddin; 2006)

Nafs-i-Falakī is related to metaphysics, since philosophers believe that *Nafs* is a stimulant of everything which is in motion or apt to move. All the celestial bodies like moon, sun and stars are moving on their own axis and around each other, that's why they should have a mover and philosophers have called it as *Nafs-i-Falakī*.

Nafs-i-Ardī is defined as an anima or soul of physical body which has been perfected as an instrument equipped with its own innate source of all the faculties, functions and activities (Shah 2007). It includes all living things; hence *Nafs* is not present in *Jamādāt* (minerals/inorganic matters). It is subdivided into three kinds viz. (i) *Nafs-i-Nabātī*; (ii) *Nafs-i-Ḥaywānī*; and (iii) *Nafs-i-Insānī*.

Nafs-i-Nabātī means soul of the plant and it causes *Ḥarakat-i-Numū* (motion of growth) in plants and it is responsible for germination and vitality of plants throughout their life.

Nafs-i-Ḥaywānī is present in animals through which they can move and it is superior as compared to *Nafs-i-Nabātī*, because *Nafs-i-Ḥaywānī* also provides power of *Mudrikah* (cognition), *Muḥarrikah* (conation), *Mufakkirah* (thinking) and

power of *Wahm* (intuition), e.g. *Nafs-i-Haywānī* informs animals that wolf is their enemy and they have to take care of their young ones.

Nafs-i-Insānī is found only in human beings. Man is the highest form of creation. He has the power for life, emotions, growth and reproduction and cognition and conation. Although these powers are also found in animals and some in plants but they are far superior in human beings. Since the *Nafs-i-Insānī* also provides intellect power and *Quwwat-i-Nāṭiqah* (power of reasoning) to the humans (Shah; 2007). So, *Nafs-i-Insānī* is superior to the other two *Nafūs* (*Nafs-i-Nabātī* and *Nafs-i-Haywānī*).

Association between *Quwā*, *Tabiyat* and *Nafs*

The Unani physicians have classified the *Quwā* (faculties) into three major kinds. Majusi (2010) described the *Quwā* on the basis of their association with *Tabiyat* and *Nafs*.

Quwwat-i-Ṭabīyiah (physical faculty or vegetative faculty)

This category of *Quwā* is of *Tabiyat* and mainly concerned with *Numū*, *Taghdhiya* and *Tawlīd*. These *Quwā* act in the nutriments for the preservation of the individuals and their species and changes the nutriments into such things which could easily be utilised by the organ as a source for replenishment of the lost part of the organ as wear and tear during its functioning.

Quwwat-i-Haywānīyah (vital faculty)

Majusi (2010) described that these *Quwā* are of *Nafs* and these are the second category of *Quwā* known as *Quwwat-i-Haywānīyah* through which *Ḥayāt* (life) is maintained. These *Quwā* begin from the heart, enter the arteries and reach all over the body and causes contraction and relaxation of the heart, arteries and veins to furnish the life. It provides vitality to the organs to enable them to receive *Quwwat-i-Nafsānīyah* to accomplish various activities of life (Ahmad; 1980). Vital faculties are believed to be responsible for emotional expressions associated with expansion that occurs in *Rūḥ* (pneuma) which is the essence of vital faculty (Zaidi; 2011).

Quwwat-i-Nafsānīyah (psyche, mental or nervous faculty)

It is the third category of *Quwā* and these *Quwā* are also of *Nafs* known as *Quwwat-i-Nafsānīyah* and mainly concerned with intellect, perception and voluntary movement (Majusi 2010). These *Quwā* produce sensations and movements in all the organs of the body. Since the tracts of these *Quwā* run through the *A'sāb* (nerves) which are connected with the muscles, hence these

Quwā contract and relax the muscles and produce movements in the organs. In other words these *Quwā* perform all the functions of the nervous system.

Difference between *Tabiyat* and *Nafs*

The word *Tabiyat* refers to *Quwwat Mudabbir-i-Badan* (supreme controlling and planning faculty of the body). Tabri (2002) says that *Tabiyat* is defined as a source of motion and rest and it has the managing power of all the bodies. Since everything in the universe is either in motion or rest. So, *Tabiyat* is only one of the faculties of the universal soul which has expanded in all the sublunary bodies which is either in motion or rest and also whether in living body (plants, animals and human) or non living things (stone, minerals etc). While below the sphere of the moon *Nafs* is present only in living bodies which are apt to move. All the events occurring on earth and in sublunary space are due to their *Tabiyat* which orders all changes and is the cause of all the physical events. It makes the body to move or rest. According to Hippocrates; *Tabiyat* is an administrative power which works for the welfare of human body involuntarily and unconsciously (Zaidi 2011).

Nafs is the *Muḥarrik* which means stimulant and initiator of the things which are in motion or apt to move. *Nafs* is not related to *Ḥayāt* (life) or living things only but it is actually related to motion (not by external force). So *Nafs* is present in all the celestial bodies like Moon, Sun and Stars because of their innate motion even though they are non living. And below the sphere of the moon among the *Ajsām-i-Thalātha* (three creatures; animals, plants and minerals) *Nafs* is present only in plants and animals and not in *Jamādāt* because it has no motion. So all the things in which innate motion found, the stimulant and initiator of their motion is *Nafs*, either they are living or not.

Tabiyat is related to all things which have specific *Mizāj* (temperament) and *Tarkīb* (structure) and are not interfered by artificial means. E.g. *Tabiyat* is present in plants through which they germinate and their growth and nourishment take place but when we cut the tree and make different things from it like chair, table, etc. then it is not related to *Tabiyat*.

Nafs is not dependent on any other things but often *Tabiyat* is dependent on *Nafs* to perform its function, e.g. *Tabiyat* needs the *Quwwat-i-Nafsāniyah* (psyche or mental faculty) to achieve *Shahwat-i-Jinsiyah* (sexual desire) to perform *Fi'l-i-Tanāsul* (sexual act). *Tabiyat* also requires its specific tools to accomplish its functions. Masihi (2008) mentions that *Tabiyat* performs whatever actions and functions (either they are *Afāl-i-Ṭabrīyah*, *Ḥaywāniyah* or *Nafsāniyah*) are needed in our body and in performing these functions *Tabiyat* is dependent on its specific tools. So the tool of *Tabiyat* is either *Mizāj* of the organ or *Tarkīb* or both (Masihi; 2008, Kabiruddin; 2001). *Tabiyat* is responsible for *Tadbīr* not only in animals but also in plants while *Nafs* is mainly concerned with animals (Majusi; 2010).

Conclusion

This study reveals that *Tabiyat* and *Nafs* are the natural powers. *Tabiyat* is present in all the bodies either they are living or non-living things. This study also shows that *Nafs* is an initiator or stimulant of all natural movements. *Nafs Falakī* is present in all the celestial bodies like sun, stars, moon etc. While below the sphere of moon *Nafs* is present in living things only as *Nafs Arḍī*.

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सारांश

शरीर की प्राकृतिक शक्तियों के रूप में तबीयत और नफ़्स पर व्याख्यात्मक अध्ययन

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यूनानी चिकित्सा पद्धति या तिब्ब में तबीयत और नफ़्स के रूप में क्षमताओं की अत्यंत महत्वपूर्ण संकल्पना है। इस अध्ययन का महत्व यह है कि यह प्राकृतिक क्षमताओं के विषय पर पिछले युग के चिकित्सकों के व्यापक कार्य बताती है। इस अध्ययन से निष्कर्ष निकला कि तबीयत के कार्य संवृद्धि, पोषण और प्रजनन से संबंधित हैं जबकि नफ़्स को शरीर की सभी इच्छाओं और गतिविधियों के एक उत्तेजक और सर्जक के रूप में पाया गया। यह केवल जीवित वस्तुओं या जीवन से संबंधित नहीं है बल्कि गति से संबंधित है, सभी खगोलीय पिंड जैसे चन्द्रमा, सितारे, इत्यादि बिना जीवन के अपने नफ़्स के कारण आगे बढ़ रहे हैं। यह अध्ययन तदबीर (इंटरवेंशनस) का भी मूल्यांकन करता है और तबीयत और नफ़्स के बीच अंतर की भी तुलना करता है।

शब्द कुंजी: खगोलीय पिंड, नफ़्स, प्राकृतिक शक्तियां, तबीयत



The Concept of *Ṣar'* (Epilepsy) and its Management in Greco-Arab System of Medicine-A Review

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Abstract

Ṣar' is an Arabic word; its literal meaning is to fall down. It is an episodic disease in which sensory and motor functions of the organs are stopped. The patient falls down and experiences convulsions and frothing from the mouth. Convulsion is the second most common neurological disorder after stroke. Approximately 1% of the world's population has convulsion. *Ṣar* is known as Epilepsy in English. The word 'epilepsy' is derived from ancient Greek word *epilambanein*. It is common but a very serious neurological disorder which is described by all the Greco-Arab physicians in their texts. In recent years due to the fear of side effects of modern medicine, there has been growing interest in Unani Medicine for the treatment of convulsions. Hence, an attempt is made in this paper to review systematically the details of Epilepsy as understood by the medieval Islamic physicians and Unani Tibb. This paper also attempts to review the classification of *Ṣar*, Unani perspective of *Ṣar'* and various causes and its principle of management as considered by the physicians of the medieval period.

Keywords: Bile, Convulsion, Involuntary movement, Phlegm, *Ṣar'* (Epilepsy)

Introduction

Ṣar' or *Mirgī* (epilepsy) is convulsion that affects the body, persists for a short duration and disappears rapidly (Anonymous, 2012; Razi Zakaria, 1997). It causes disturbances in the functions of sensory and motor parts of the body so the body loses its natural posture and patient falls down involuntarily. This eminent falling is known as *Ṣar'* (Majusi, 1889) and this term is evolved due to the symptom of falling. This condition occurs due to an incomplete obstruction in *Butun-i-dimāgh* (ventricles of brain) and *Majari-i-'Asāb* (pathway of nerve impulses) due to imbalance or excess of any *Khilt* (humour) viz; phlegm, black bile, yellow bile, dam or gas and toxic matters. Among them dominance of phlegm is most common cause (Razi Zakaria, 1997). Rarely it occurs due to *Safrā'* (bile) alone, unless it is accompanied by excessive mixing with dam, *balgham* (phlegm) or *Sawdā* (black bile) (Khan Azam, 2003). While *Sawdā* (black bile) precipitates severe status of disease (Ibn Hubal, 2004). Approximately 1% of the world's population suffers from epilepsy or convulsion. Galen argued that many diseases which affected men did not affect women because their superfluous blood was eliminated by menstruation or lactation but in pregnancy Women may be affected due to amenorrhoea and after delivery, this condition may disappear due to the elimination of puerperal blood. Women with normal menstrual cycles enjoy immunity to epilepsy. Men who frequently eliminate excess blood through hemorrhoids or epistaxis may have freedom from such diseases (Ibn Sina, 2007).

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Historical Background

The word 'Epilepsy' is derived from ancient Greek word *epilambanein*, meaning "something seizing the subject" (Thomas, *et al.*, 2008; Mark, 2005). According to ancient people epileptic seizures occur due to evil spirits or demon that had invaded a person's body. First time Hippocrates challenged this superstition in his book on Epilepsy, 'On the Sacred Disease' (460-377 B.C), which recognized seizure as a dysfunction of the brain (Benjamin and Virginia, 2000). *Şar'* (epilepsy) has been described extensively in Greco-Arab literature and classified according to the organ affected for example; *Şar' Dimāghī Aslī* (primary epilepsy), *Şar' Mī'dī* (epilepsy due to involvement of stomach), *Şar' Atrāfi* (epileptic aura), *Şar' Kabidi* (epilepsy due to involvement of spleen), *Şar' Tehāli* (epilepsy due to involvement of liver), *Şar' Rahimī* (hysterical epilepsy) etc., According to dominant *Akhlāt-e-Raddiyā* (morbid humors), it is named as *Şar' Balghamī* (epilepsy due to phlegm), *Şar' Sawdāwī* (epilepsy due to black bile), *Şar' Damwī* (sanguineous epilepsy) and *Şar' Safrawī* (bilious epilepsy) (Majusi, 1889; Razi Zakaria, 1997; Ibn Sina, 2007).

Definition

According to Ibn Rushd (YNM) and Ibn Rushd (1987) "*Şar'* is a sudden fall of a person with an involuntary movement or convulsion of the whole body due to the cessation of *Quwā Nafsāniyyā* (sensory and motor function)". He further says that "Cessation of *Quwā Nafsāniyyā* (sensory and motor functions) associated with sudden fall indicates the cause lies in the brain". It does not lie for longer time and disappears rapidly (Razi Zakaria, 1997). Ibn Sina (2007) mentioned that the *Tashannuj* (convulsion) is the contraction of muscles towards their origin and this contraction occurs due to the *Imtela* (congestion) or *Yubusat* (dryness) of the nerves. The *Imtela* (congestion) occurs due to *Ghalīz bukhārāt* (putrefied gases) of *ghair taba't khilt* (morbid humours) like *balgham* (phlegm) or *Sawdā* (black bile). It has also been stated that it is an incomplete dispersion of the *Ghalīz Khilt* (viscid humour) which obstructs the pathway of *Rūh* in *butun-i-dimāgh* (ventricles of Brain), causing psychogenic pain in the head. In order to remove these *Ghalīz khilt* (viscid humour), nerves produce a tremor in the whole body which helps the body to eliminate *Khilt mozī* (toxic matters). This tumultuous movement is termed as *Şar'* (Razi Zakaria, 1997).

Classification of *Şar'* in Classical Unani Literature

In Greco Arab medicine different types of *Şar'* (epilepsy) are mentioned as per causes:

1. According to cause in brain or other than brain (Khan Azam 2003)
 - a. *Şar' Asli* (Primary Epilepsy): When the cause is in the brain.

- b. *Şar' Shirki* (Secondary Epilepsy): When the cause is other than brain.

Jalinus classified it as (Razi Zakaria 1997; Ali 1987)

- a. *Şar' Asli* (Primary Epilepsy): Due to the direct involvement of the brain.
- b. *Şar' Shirki Mi'di* (Secondary Epilepsy): Due to the involvement of stomach.
- c. *Şar' Shirki Atrāfi* (Secondary Epilepsy): Due to the involvement of hand and legs.
- d. *Şar' Udwi*: Due to the involvement of any organ (Razi Zakaria, 1997).

Hippocrates states that *Kābus* (nightmare/incubus) is also a type of *Şar'* in which patient feels pressure on his chest in lying posture while asleep (Ibn Rushd, YNM; Ibn Rushd, 1987; Anonymous 2012). *Şar' Dimāghī* is named so as the causative factor (morbid matter) lies in the brain. According to Hippocrates this type of *Şar'* is difficult to cure because it directly affects the brain (Khan Azam 2003).

As per the classification based on *Akhlat* (humours), *Şar' Asli dimāghī* (Primary Epilepsy) has four types (Khan Azam 2003).

- i. *Şar' Balghamī*: Due to the dominance of Phlegm
- ii. *Şar' Sawdā'wī*: Due to the dominance of black bile
- iii. *Şar' Damwī*: Due to the dominance of sanguine humour
- iv. *Şar' Safrāwī*: Due to the dominance of yellow bile but it is very rare (Khan Azam, 2003).

Şar' Dimāghī is further classified into the following:(Khan Azam, 2003).

- i. *Şar' Dimāghī Rīhī*: Due to the collection of putrefied gas in the Brain
- ii. *Şar' Darbī Dimāghī*: Traumatic Epilepsy

Another classification is according to *Ishtarak-i-A'za* (involvement of other organs), hence these types of *Şar'* occur due to accumulation of the causative matters in the brain from any other organ which is called *Şar' Udwi* (reflex epilepsy), (Ibn Sina, 2007; Anonymous 2012)

- i. *Şar' Shirki Mi'dī*: A type of secondary epilepsy is caused due to the causative matter which lies in stomach affecting the brain.
- ii. *Şar' Shirki Mirāqī*: Melancholic Epilepsy
- iii. *Şar' Shirki Tehālī*: Secondary Epilepsy due to the involvement of spleen
- iv. *Şar' Shirki Kabidī*: Secondary Epilepsy due to the involvement of liver
- v. *Şar' Shirki Me'wī*: Secondary Epilepsy due to the involvement of intestine
- vi. *Şar' Shirki Rahimī*: Hysterical Epilepsy

Ehtebas-i-Ṭams (amenorrhoea) occurs in women during pregnancy which also affects the brain causing *Ṣar' Rahimī* (hysterical epilepsy) and it disappears due to elimination of *Fāsīd* (morbid) blood once the menstruation starts after delivery (Ibn Sina, 2007).

According to the intensity of symptoms, it is divided into two types (Ibn Sina, 2007; Khan Azam, 2003; Anonymous, 2012) as given below:

1. *Sar' Shadīd*: Grand Mal Epilepsy
2. *Sar' Khafīf*: Petit Mal Epilepsy

One more classification is made according to the occurrence whether in day time and night as given below:

1. *Sar' Nahāri*: Diurnal Epilepsy occurs in day time
2. *Sar' Laylī*: Nocturnal Epilepsy occurs in night time (Ibn Sina, 2007; Khan Azam, 2003; Anonymous, 2012).

Some other types of *Ṣar'* are (Ibn Sina, 2007; Khan Azam, 2003; Anonymous, 2012) as given below:

1. *Ṣar' Shirkī dīdānī*: Epilepsy caused by intestinal worms
2. *Ṣar' Lasī*: Sting Epilepsy
3. *Ṣar' Darbī*: Traumatic Epilepsy
4. *Um'm-us-sibyan*: Infantile Convulsion
5. *Ṣar' Shirkī badanī*: Secondary Epilepsy due to reflex
6. *Sar' Qalbī*: Epilepsy associated with cardiac diseases
7. *Sar' Hissī*: Epilepsy due to increased sensitivity of brain
8. *Sar' Khababī*: Preclusive Epilepsy in which patient runs fast before the episode of convulsion.

Aetiology

The matter causes *Ṣar'* is same as that causes *sakta* (stroke) but differs in *kaifiyat* (quality), *miqdār* (quantity) and *jauhar aslī* (basic causative matter). This *Jauhar* (matter) is less viscid as compared to that which causes stroke (Majusi, 1889). There are different causes of *Ṣar'* which develop either in the brain or outside the brain.

An incomplete obstruction in *butun-i-dimāgh* and *Majāri A'sāb* due to any type of humour, gas or toxic matter produces this condition of *Ṣar'*.

1. The matter which causes *Ṣar'* is due to the dominance of *ghalīz madda* (viscid matter) mostly phlegm derived (Razi Zakaria, 1997; Ibn Rushd YNM,

Ibn Rushd 1987) but severity of symptom occurs due to *sawdā* (black bile) which accumulates sometimes in *Jirne dimāgh* (brain tissue) and sometimes in *butun-i-dimāgh* (ventricles of brain) (Razi Zakaria, 1997). *Sawdā* (black bile) laden with *balgham* (phlegm) can also be a cause of *Şar'* (Khan Azam, 2003).

2. According to Rabban Tabri (2010) *lesdar khilt barid* (viscid humours like *balgham* or *Sawdā*) obstructs the brain or the passages of *rūh nafsani* (air vessels) resulting *Şar'*.
3. Most Unani physicians think that epilepsy due to *Safrā'* rarely occurs (Khan Azam, 2003) only when *Safrā'* is accompanied by *dam*, *balgham* (phlegm), or *sawdā* (black bile) (Khan Azam, 2003).
4. Aristotle mentioned that *ghaliz riyah* (morbid gaseous matter) obstructs the *butun-i-dimāgh* (ventricles of the brain); endorsed by Ibn Sina (2007) who said that the *Şar' dimāghi* (primary epilepsy) is due to the presence of any *khilt* (humor) which produces *riyāh* (gases), it results obstruction in the pathways of *rūh nafsāniyya* (air vessels). Accumulation of *riyāh* (gases) in *batan-i-muqaddam dimāgh*, arises mostly from *Balgham*, *Sawdā*, *Dam* and rarely by *Şafrā'* (Ibn Sina, 2007).

Ibn Rushd (YNM) and Ibn Rushd (1987) considered Arastu's thought with a little difference and states that according to my opinion, *Şar'* occurs due to *riyāh* which is produced in other organ and then ascends to the brain and it is similar to *bārid ratab khilt* (balgham) or *bārid yābis khilt* (sawdā) which are the main focus of this *riyāh* (gas)". It is also stated that "*Şar' dimāghī* (primary epilepsy) develops due to the accumulation of either *khilt ghaliz balghamī* (viscid phlegm) or *khilt ghaliz sawdāwī* (viscid black bile) in *butun-i-dimāgh* (ventricles of brain) and it obstructs the pathway of *rūh*" (Majusi, 1889; Khan Azam, 2003; Razi Zakaria, 1997; Ali, 1987)

The other causes of *Şar'dimāghī* (Primary Epilepsy) are as follows:

1. *Tangī-i- dimāgh*: Squeezing of brain tissue due to head injury
2. Rotating head excessively and exposing brain to heat etc.

These conditions vibrate the humours of the brain, resulting in irregular movements of the limbs of the body (Majusi, 1889). Sometimes *Sue haḍm* (dyspepsia) occurs due to yellow bile which causes *Şar'shirkī mi'dī* (Ibn Rushd, 1987). According to Majusi (1889) and Anonymous; (2012), it also occurs due to *bukharāt balghamī* (phlegmatic gases) or *bukharāt sawdāwī* (gases produced from black bile) which ascends to the brain from *fam-i-mi'dā* (cardia) that accumulates in *butūn-i-dimāgh* and causes obstruction. *Şar'aṭrāfi* (reflex aura) and *Şar' Udwi* (reflex epilepsy) occur due to the involvement of that organ e.g. a feeling of movement of gases or sensation from limbs or organs toward brain indicates that the cause lies in that organ (Majusi, 1889; Anonymous; 2012)

Sometimes *Ehtebās-i-Tamth* (amenorrhoea) in women causes *Şar' Rahimi* (Hysterical epilepsy) as mentioned by Ibn Nafis (1906) "*Raddi bukkharat* (putrefied gases) which produced in amenorrhoea ascends and accumulates in the brain, to get rid of this *shai-i-mozī* (toxic matter) brain becomes constricted and pathway of *rūh* annihilated."

The exact symptoms are also observed in males due to *tarke jema* (abstinence). "When *Ijtemā-i-mani* (collection of semen) occurs in '*auia mani* (epididymis) and *rahim* (uterus), it becomes morbid and transforms into *kaifiyat sammiyā* (toxicity) which affects the brain" (Ibn Sina, 2007; Ibn Nafis, 1906).

Ghazruni describes the causes of *Tashannuj Ratab* and *Um'm-us-Sibyan* in his magnum Opus Al-Sadidi as follows:

"Sometimes *Şar'* occurs in the infant just after delivery, during lactation period or in adolescence period due to excessive *rutubat* (wetness) in brain of the child" (Ibn Sina, 2007).

Hippocrates enumerates the common factors which are responsible for *Şar'* in children.

- 1) Excessive wetness of brain
- 2) Unhealthy diets (Majusi, 1889)

Scorpionbite is also a cause of convulsion as described by Ibn Nafis (1906) and Ibn Sina (2007):

"The toxic *kaifiyat* (effect) which introduced in the body from outside such as from scorpionbite toxin spreads to the brain via nerves from the inflicted site of the body" (Ibn Sina, 2007; Ibn Nafis, 1906).

Intestinal worms play a role in causing a type of *Şar'* which is called *Şar' dīdānī* (Ibn Sina, 2007). Sometimes, it occurs due to the effect of some other diseases like *Ātshak* (syphilis), *waja' al-mafāsīl* (arthritis), *nīqris* (gout) or the disease which may give rise to epilepsy like colitis (Shah, 2007), *kābus* (nightmare) (Jurjani, 1903), *dawrān-i-sar* (vertigo) and melancholia (Ibn Sina, 2007).

Pathogenesis

In Unani classical literature, most of the scholars while describing the pathogenesis of this disease have mentioned *asbāb-i-badiya* i.e. cold and wet environment places, etc. and *Asbāb wāsīlā* i.e. excessive wetness or dryness in temperament due to imbalance of any *khilt* (humour), excess use of beverages and edibles, dry fasting, profound fatigue, insomnia and have too much sex and other means of evacuation of humours are causative factors in the development of the disease (Razi Zakaria, 1997; Ibn Zuhr, 1986). These factors may obstruct

the *Butun-i-Dimāgh* (ventricles of brain) and *Ruh Nafsāniyyā* (sensory and motor pathway). *Rūh* is a *latif* and *bukhāri jism* (gaseous matter) that acts as a vehicle for *qūwwā* (body energy) (Kabiruddin YNM). The *Rūh* carrying *Quwa mudrika* or *hassasa* (sensory power) is called as *Rūh-i-hassāsā* and the one carrying *Qūwa muharrikā* (motor power) is known as *Rūh muharrika* (Ibn Rushd, YNM; Ibn Rushd, 1987). If obstruction restricts the *Qūwā muharrika* (motor power) to reach the affected organ, an involuntary movement starts in the form of convulsion in the body to purge out that morbid matter (Majusi, 1889; Khan Azam, 2003; Razi Zakaria, 1997; Ali, 1987)

Clinical Features

Severe headache, *girāni-i-sar wa zabān* (heaviness of head and tongue) with *girani-i-hawās* (diminished sensation), *dawar* (vertigo), alteration in the function of *Qūwā sami'a* (sense of hearing), *Qūwā shāmmā* (sense of smell) and *Qūwa zāyeqā* (sense of taste) (Khan Azam, 2003), *zulmat-i-chashm* (impaired eye vision) and *iztirāb-i-harkāt* persist with symptoms of specific humour with no any other symptom related to any other organ, is sure for *Şar' dimāghī* (Ibn Sina, 2007). If *davī* and *ṭinīn* (tinnitus) associated with these symptoms then it is called *Şar' dimāghī rihī* (Khan Azam, 2003).

Painful flatulence with *qarāqar*, belching, local inflammation and spasm in the diaphragm and retrosternal pain after taking meal till the digestion of food is completed, vomiting of undigested foods and ascending of gases from the diaphragm to brain are the symptoms of *Şar' Mirāqī*. Excessive salivation, expulsion of intestinal worms and belching are the important sign and symptoms of *Şar' Dīdānī*. In case of *Şar' Tehālī*, splenomegaly and abdominal pain are found with other symptoms of epilepsy. The history of amenorrhoea, sexual abstinence or pregnancy is found in case of *Şar' Rahimī*, with other associated symptoms of epilepsy. The symptoms of *Şar' Aṭrafī* are feeling of coldness and yawning before onset of fits, tingling sensation starts from the affected parts of both limbs spreading toward the brain and get spasm of the fingers of both limbs, during fits eyes are open with full of tears, blackish color of face and yellow color of urination (Ibn Sina, 2007; Khan Azam, 2003).

Usool-i-Ilaj (Principles of Treatment)

In Unani system of medicine, the *Usūl-i-Ilāj* (principle of treatment) for *Şar'* is the removal of *Asbāb-i-Māddī* (causative material) and correction of *Su-i-Mizāj* by the means of *Ilāj bit Tadbīr* (regimenal therapy), *Ilāj bil Ghidhā* (dietotherapy) and then *Ilāj bil Dawā* (pharmacotherapy). Preferably the management of epilepsy started according to the phases of the disease as patient presents the symptoms before fits, during fits and after fits (Ibn Sina, 2007; Khan Azam, 2003).

Ilaj Bit Tadbeer (Treatment through Regimenal Therapy)

During the epileptic fits a soft cloth or cotton ball should be placed in mouth cavity and keep the patient on bed in a ventilated room (Kabiruddin, 1935). *Sa'ūt*, *shamūm*, *'atūs*, *quṭūr*, *bakhūr* and *wajūr* are useful for recovering of consciousness. Emetics for the *Istafragh-i-Mādda* (evacuation of matter), *Takmīd* with rough clothes and *Khardal* (*Brassica nigra*) for *Taskhīn-i-Rās*, massage on cervical region, upper limb, followed by lower limb is undertaken. *Faṣḍ* (venesection), *Hijāma* (cupping) and *Qai* (cauterization) are also adopted. (Razi Zakaria, 1997; Abul Mansoor 2008).

Ilaj Bil Ghiza (Treatment through Dietotherapy)

Wild birds should be used but avoid pet and fatty birds. Mutton of Lamb, fish and brain of camel are very useful diet in case of *Ṣar'*. The flesh of rabbit can also be used, prepared using Soya (*Anethum Sowa*) and Gandana (*Allium ampeloprasum* L.) (Razi Zakaria, 1997).

Ilaj Bid Dawa (Treatment through Medicine)

During intermittent condition of *Ṣar' Asli* (*dimāghi*), Unani physicians prescribe *Munzijāt* (concoctive drugs) first for 21 days, on the basis of dominant *khilt*, followed by *mushilāt* (purgative drugs), and during two *Mushil* (purgative) dose administrations, *Tabrīd* is carried out (Kabiruddin M, 1935). After that, gargles and *Aṭūs* for the *Tanqiyā Mawad* of the brain are required. *Sikanjbīn* prepared with *Sirka Unsuli* (vinegar of *Allium cepa*), Honey and Kabar (*Capparis spinosa* L.) can also be used for *Tanqiyā*. After *Tanqiya Dimāgh*, *Tā'dīl-i-Mizāj* (Balancing temperament) is carried out by *Qawi* (powerful) and *Musakhkhin* (calorific) drugs. If it occurs due to association with stomach disease then emetics are indicated for *Tanqiya Mi'da*, followed by purgative like Shaham Hanzal (*Citrullus colocynthis* Schrad.) and *Ustokhuddūs* (*Lavandula stoechas*). *Moqawwi Mi'da* drugs and *Zimādāt* (paste) are also used to strengthen the digestion subsequently (Razi Zakaria 1997; Kabiruddin, 1935).

In Unani system of medicine different compound formulations are prescribed for the treatment of *Ṣar'*. For example *Astamkhīqūn* (Chaghmani, 1889); *Ayarij Arkaghanīs* (Ahmad Tabri, 1995), *Ayārij Rofas*, *Ayārij Loghazia* (Chaghmani, 1889; Khan Ajmal, 2002), *Ayārij Fiqrā* (Ibn Rushd, 1987); *Dawāusshefa* (Khan Ajmal, 2002); *Habb Favānia*, *Habb Jund* (Khan Azam, 2003), *Habb Mushil Dimāghī* (Anonymous, 2006), *Habb Qoqāyā* (Khan Ajmal, 2002); *Itrifal Kabīr*, *Itrifal Saghīr*, *Itrifal Ustokhuddus* (Rabban Tabri, 2010); *Joshanda Zufa* (Abul Mansoor 2008); *Mājūn Azarāqi* (Khan, 2006), *Mājūn Falāsfā* (Rabban Tabri, 2010), *Mājūn Ghisiyānī* (Ibn Sina, 2007), *Mājūn Ibn Māswyā* (Khan Azam, 2003), *Mājūn Masruditus* (Ahmad Tabri, 1995), *Mājūn Mohammad Zakaria* (Khan Azam, 2003), *Mājūn Sīr* (Khan S, 2006), *Mājūn Sīsaliyūs* (Khan Azam, 2003), *Mājūn*

Sotirā (Arzani, 2002), *Mājūn Zabīb* (Khan Azam, 2003; Khan Ajmal 2002), *Mājūn Najāh* (Khan Azam, 1996), *Mājūn Šarʿ*, *Mājūn Suqrat* (Arzani, 1998), *Mājūn Talkh* (Anonymous, 2006), *Mājūn Uod Salīb* (Khan Azam, 2003); *Mufarreh Azam*, *Mufarreh Bārid* (Khan Ajmal, 2002); *Roghan Abhal*, *Roghan Kaddu* (Khan, 2006); *Sikanjabin Unsuli*; *Tiryāq Zahab* (Khan Azam, 2003), *Tiryāq Arba* (Ibn Sina, 2007), *Tiryāq Aqrab* (Arzani, 2002), *Tiryāq Fārūq* (Rabban Tabri, 2010), *Tiryāq Kabir Alvi Khan* (Arzani, 2002), *Tiryāq Samāniā* (Ibn Sina, 2007) and *Tiryāq Shekhur Raīs* (Ibn Sina, 2007).

Anjame Marz (Prognosis)

Hakim Rofas states that *Šarʿ* gets cured when it complicates either into *baraš-i-abiyadh* (leucoderma) around the head or *fālij* (hemiplegia) or melancholia. The appearance of varicose vein or bleeding piles is also a sign of cure. According to Hippocrates if *Šarʿ* appears in childhood and patient laughs during fits, it indicates the possibility of cure. *Umm-us-Sibyān* is a fatal disease stated by most of the Unani physicians (Ibn Sina, 2007).

Tahaffuzi Tadabeer (Preventive Measures)

Zūd-i-haḍm diet, exercise, head massage and *tanqiyā* (elimination of morbid matters) in spring season are suggested by different ways viz; venesection, cupping etc. (Ibn Sina, 2007; Kabiruddin, 1935).

A person should avoid the factors causing *Šarʿ* like very hot and cold weather, loud and horror noises, sight of circulating and spinning things, sleeplessness, sorrow, anger, intense exercises and alcoholism. The food which delays the digestion like sweets, oily foods and *fawakeh rataba* (fresh moist fruits) i.e. apples (*Malus domestica*), nashpati (*Pyrus communis* L.), behdana (*Cydonia oblonga* Mill) and the edibles (Ibn Sina, 2007; Khan Azam, 2003), produce phlegm and aggravate the symptoms should be avoided. Moreover, the diets having cold temperament like kahu (*Lactuca sativa* L.), bathua (*Chenopodium album* L.), khubbazi (*Malva sylvestris* L.), chuqandar (*Beta vulgaris*), shaljam (*Brassica rapa*), band gobhi (*Brassica oleracea* L.), gandana (*Allium ampeloprasum* L.), karafs (*Apium graveolens* L.), mushroom (*Agaricus campestris* L.), khardal (*Brassica nigra* L.) (Razi Zakaria, 1997) and baqla (*Vicia faba* L.) (Ayyub Ali, 1987) should be avoided by the patient of *Sarʿ*.

Conclusion

Based on the review of the literature, it can be concluded that epilepsy is a common but serious neurological disorder which is described by all the Greco-Arab physicians. They have suggested that this problem can be managed by diet, regimenal therapy and Herbo-mineral medicines. It is hoped that this review article will generate interest in various Unani products for their antiepileptic activity.

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सारांश

ग्रीको-अरब चिकित्सा पद्धति में सरआ' (ऐपिलेप्सी) की अवधारणा और इसका उपचार - एक समीक्षा

¹एम.ए. कलाम, ²सरफराज़ अहमद, ³जी. अहमद और ⁴जी. सोफी

सरआ' एक अरबी शब्द है जिसका शाब्दिक अर्थ 'नीचे गिरना' है। यह एक दौरे वाला रोग है जिसमें विभिन्न अंगों के सेन्सरी और मोटर कार्य सुचारु रूप से काम करना बन्द कर देते हैं। रोगी गिर पड़ता है और दौरा (कन्वल्शन) पड़ने लगता है तथा मुँह से झाग निकलने लगता है। स्ट्रोक के बाद कन्वल्शन सबसे अधिक सामान्य तंत्रिका संबंधी विकार है। सरआ' अंग्रेजी में एपिलेप्सी के नाम से जाना जाता है। दुनिया की आबादी का लगभग 1% लोग कन्वल्शन से ग्रसीत हैं। 'एपिलेप्सी' शब्द प्राचीन ग्रीक शब्द एपीलेमबेनीन से लिया गया है। यह सामान्यतः पाया जाने वाला बहुत ही गंभीर तंत्रिका संबंधी विकार है जिसे सभी ग्रीको-अरब चिकित्सकों ने अपने ग्रंथों में वर्णित किया है। पिछले कुछ वर्षों में आधुनिक चिकित्सा के दुष्प्रभावों के भय के कारण कन्वल्शन्स के उपचार हेतु यूनानी चिकित्सा में दिलचस्पी बढ़ रही है। इसलिए इस पेपर में व्यवस्थित रूप से मिर्गी (एपिलेप्सी) के विवरण की समीक्षा करने का प्रयास किया गया है जैसे मध्यकालीन इस्लामिक चिकित्सकों और यूनानी तिब्ब द्वारा समझा जाता था। इस पेपर में मध्यकालीन काल के चिकित्सकों द्वारा विचार किए जाने वाले सरआ' के वर्गीकरण, सरआ' का यूनानी परिप्रेक्ष्य, विभिन्न कारणों और इसके उपचारों के सिद्धांत की समीक्षा करने का प्रयास किया गया है।

शब्द कुंजी: पित्त, ऐंठन, अनैच्छिक क्रिया, बलगम, सरआ' (ऐपिलेप्सी)



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