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Role of Yava (Hordeum vulgare Linn.) as a Swastyahita Aahara Dravya

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Abstract*—Swasthya Rakshan i.e. maintaining well being of a person is the foremost aim of Ayurveda. It can be achieved by following Dincharya, Rituchrya mentioned in Ayurvedic samhitas. Now a day's risk of lifestyle diseases like Diabetes mellitus, Obesity, Heart disease, Hypertension, Cancer etc. is increasing day by day. It is the commonest problem world population is facing right now. This is a result of unhealthy diet and lack of physical activity. To control these; healthy changes in lifestyle and food habits is the need of time. Yava (Hordeum vulgare Linn.) is herbal drug belonging to Gramineae/ Poaceae family mentioned as Swasthahita Dravya in Samhitas. It is also used as a dietary supplement specifically in Vasant, Varsha and Sharad Ritu. Yava is in possession of Kashay, Madhur Rasa, Katu Vipaka, Sheet Veerya and Ruksha Guna. It is mentioned as Lekhaniya Dravya. Yava which is also known as Barley is rich with essential nutrients like protein, dietary fiber and other micronutrients. It is having low amount of fat which is beneficial to decrease chances of lifestyle diseases. Use of Yava in daily diet would be beneficial to maintain good health. It is cost effective and easily available worldwide. This review shows the role of Yava in daily food habits for healthy life*.

***Keywords*—** *Swasthya Rakshan, Lifestyle diseases, Yava, Dietary supplement*.

I. INTRODUCTION

Aim of *Ayurveda* is to get rid of diseased condition i.e. to get rid of sickness of a person and to prevent diseases, to keep a healthy person in healthy condition. Health i.e. Swasthya is maintaining homeostatic condition of *Dosha*, *Dhatu*, *Mala*, *Agni* in the body according to *Ayurveda*. Swastha person can achieve a well balanced constitution, attractive appearance, good muscular strength, complete peace of mind and a disease free life.

As prevention is better than cure; prime importance is given to maintain health and to prevent diseases in Ayurveda. Measures like *Dinacharya* (daily regimen), *Ritucharya* (seasonal regimen), proper dietary habits and *Sadvritta*(code of conduct) have been described in Samhitas.

Three sub-pillars i.e. *Trayopsthambha*[1] are essential to maintain health. Diet i.e. Aahara is one of them which is playing the most important role for healthy lifestyle and thus to achieve longevity of a person. It is also addressed as *Mahabheshaja* by *Aacharya Kashyapa*[2].

Due to changes in lifestyle; dietary pattern of masses is changing day by day. Improper eating habits, increased stress level, absence of physical exercise have lead society towards lifestyle diseases. Number of patients and individuals at risk of these diseases are increasing extremely. Their prevention has become a major global concern now. It can be achieved by having balanced diet.

Aacharya Charaka[3] and *Vagbhata*[4] have explained *Nityasevaniya Dravyas* which can be compared with balanced diet. Each one of them has different nutritive values. Yava (*Hordeum vulgare* Linn.) is included in those *Nityasevaniya Dravyas*. It is available and used worldwide in various forms. *Yava* i.e. Barley used in daily diet has potential to act against lifestyle diseases and to prevent them. Modern research is also directed towards same recommendation.

Aim-

To study role of Yava (*Hordeun vulgare* Linn.) as a *swasthahita aahara dravya*.

Objectives-

- To study *Ayurvedic aspect* of *Yava.*
- To study botanical and Nutritional aspects of *Yava*.
- To study role of *Yava* as *Swasthyahita Ahara* Dravya with its *Raspanchaka* and Phytochemicals.

II. METHODOLOGY

1. Yava- An ayurvedic perspective

Yava (*Hordeum vulgare* Linn.) belongs to Poaceae (grasses) family. It is considered to have *Kashaya rasa*, *Madhura rasa*, *Katu vipaka*, *Sheeta veerya*, pacifies kapha and *pitta*. It is in possession of *Mrudu*, *Guru*, *Ruksh*, *Picchila guna*. *Yava* has properties like- *Lekhana*, useful for wounds like *Tila*(Sesamum), *Medhya*, *Agnivardhak*, *Swarya*, *Balakar*, Bahuvata-*Malakar*, *Varnyasthairyakar* [5]. It is also known to decrease *Meda*, *Trishna* and does *raktaprasadan* [6]. *Yava* is having dominance of *Prithvi*, *Vayu* and *Jala Mahabhuta*.
In *samhitas*; *Yava* has been classified in following *vargas*:-

Table No. 1

Sr.No.	*Samhita*	*Adhyaya*	*Varga*
1.	*Charak samhita*[7]	*Annapan vidhi*	*Shookdhanya*
2.	*Sushruta samhita*[6]	*Annapan vidhi*	*Kudhanya*
3.	*Ashtang Hruday*[8]	*Anna Swarup Vidnyaniya*	*Shookdhanya*
4.	*Bhavprakash Nighantu*[5]	*Dhanyavarga*	*Shookdhanya*

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Yava is also mentioned specifically in following context-

1. As *Nitya Sevaniya Aahar Dravya- Aacharya Charaka*[3] and *Vagbhata*[4] have mentioned *Yava* as a *Nitya sevaniya dravya*. These dravyas maintain health of a person and restricts the diseases from originating.
2. In *Agryasangraha*[9]- *Yava* is mentioned as *agrya/pradhan* among *Purishajanak dravyas* in *Charak Samhita*.
3. As *Lekhan Dravya*[10]- *Aacharya Sharangdhara* considered *Yava* as a *Lekhana Dravya* along with honey, hot water and *Vacha* (*Acorus calamus* Linn.).
4. In *Ritucharya*[11]- *Yava sevan* is useful in *Sharad ritu. Puran Yava sevan* should be done in *Vasanta* and *Varsha ritu* as mentioned in *Charak samhita*.

2.1 Botanical Illustration of Yava (Hordeum vulgare Linn.)

- Morphology[12]-

Hordeum vulgare Linn. is annual plant with 50-100 cm. height. Leaves are flaccid, linear, acuminate. Spike(with awns) are 20-30 cm. long, 8-10mm. broad, flattened,2-ranked,with brittle axis; lateral spikelets stipitate, staminate, muticous; perfect in the middle, sessile, aristate; glume lanceolate subulate at the base, ciliate-plumose, the longer awns once and half as long as the sterile flowers, empty glumes of the lateral spikelets muticous; awn of the fertile glume scabrous, 15cm.long.

- Taxonomy[13]-

Table No. 2

Kingdom	Plantae
Subkingdom	Tracheobionata
Superdivision	Spermatophyta
Division	Magnoliophyta
Class	Liliopsida
Order	Cyperales
Family	Poaceae
Genus	Hordeum
Species	*Hordeum vulgare* Linn.

Yava (*Hordeum vulgare* Linn.) i.e. barley is one of the top most cultivated crops globally (12% of total cereal cultivated), ranking fourth among cereal grains after wheat, rice, and maize [14]. Barley outperforms other cereals under various environmental stresses due to its winter-hardy, drought-resistant, and early maturing nature and is thus generally more economical to cultivate [15]. The major production states of Barley in India are Rajasthan, Uttar Pradesh, Madhya Pradesh, Haryana, Punjab, West Bengal, Jammu and Kashmir, some regions in Bihar, Uttaranchal and Himachal Pradesh.

2.2 Nutritional Facts

Yava i.e. Barley is a versatile cereal grain which is rich in macro and micronutrients. It fulfills major requirements of human body. Following nutrients are present in *Yava*-

Table No. 3

1. Nutrients[16]

Dietary fibre	62%
Carbohydrate	26%
Protein	20%
Calories	18%

2.Vitamins[16]

Niacin	23%
Vitamin B6	13%
Thiamin	13%
Riboflavin	7%

3. Minerals[16]

Manganese	66%
Selenium	54%
Phosphorus	22%
Copper	21%

4. Phytochemicals[17]

Phenolic acid	Tocols
Flavonoids	Phytosterols
Lignans	Folate

III. DISCUSSION

1. Role of Yava/Barley as Swasthyahita Ahara Dravya as per Ayurveda-

1. *Rasa- Yava* is in combination of *Kashay- Madhur rasa*[5]. *Kashaya* rasa decreases *Pitta-kapha*, purifies blood, absorbs the *kleda-meda* and performs as *Lekhan dravya*. It also controls speed of cell life towards its destruction i.e. increases life span of cell [18]. *Madhura rasa* increases *Dhatubala*.
2. *Veerya- Sheeta veerya*[5] of *Yava* does *Jeevaniya karya.*
3. *Vipaka- Katu vipaka*[5] absorbs excess *sneha, meda, kleda* present in body.
4. *Guna*[5]- *Guru guna* increases quantity of *mala*. *Mrudu guna* helps in softening of *mala*. *Picchila guna* softens the route of *mala* and helps in excretion. *Ruksha guna* absorbs excess *Kapha, Meda* and *kleda*.
5. *Mahabhutadhikya- Yava* is in possession of *Prithvi*, *Vayu* and *Jala mahabhuta*. *Prithvi mahabhuta* gives *sthirata* and *guruta* to *Yava*. *Vayu* provides it *rukshata* by which absorption of excess *kleda-meda* is done. While *Jala mahabhuta* binds the *Purisha* together by its *sandhan karma*.
6. *Karma* [5] - Following *karmas* of *Yava* are seen by corresponding attributes-

Table No. 4

S.No.	*Karma*	*Karan-Mimansa*	Mentioned as
1.	*Purishajanana*	*Guru guna, Prithvi mahabhuta* increases quantity of *Purisha*. *Mrudu guna* softens it and *Picchila guna* helps it by softening its route of excretion.	*Agrya in Purishajanak dravya*
2.	*Lekhana*	*Kashaya rasa, Ruksha guna* absorbs *kleda,meda* and ultimately does *lekhan* i.e. reduces thickened coating inside *strotasa* which causes obstruction of flow.	*Lekhaniya dravya*
3.	*Agnivardhak*	*Kashaya rasa* absorbs *Kleda* in *Aamashaya* resulting into *Agnivardhana*.	

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4.	*Medhavardhak*	*Madhra rasa* does *Medhya karya*	*Nitya sevaniya dravya*
5.	*Swarya*	*Madhura rasa* does *Swarya karya*	
6.	*Sthairya-Balakar*	*Mahura rasa,Guru guna, Pruthvi mahabhuta* increases *dhatubala*. *Sthairya* is obtained due to dominance of *Prithvi mahabhuta*.	
7.	*Varnasthairyakar*	*Madhura rasa* does *varnya karya*. *Rakta-Pitta Shodhana* is done by *kashaya rasa* and *prasadan karya of sheeta veerya* help to maintain *varna*.	
8.	*Vrushya*	*Madhur rasa* and *Sheeta veerya* promotes *Vrushya karya.*	
9.	*Bahuvata*	*Kashaya rasa, Sheeta veerya* and *Ruksha guna* increases *vata.*	

2. Role of Phytochemicals in Yava/ Barley

Yava/ Barley contain beta-glucan which is largely credited for these health benefits. It also contains phytochemicals including phenolic acids, flavonoids, lignans, tocols, phytosterols, and folate. These phytochemicals exhibit strong antioxidant, anti proliferative and cholesterol lowering abilities, which are potentially useful in lowering the risk of certain diseases. Therefore, the high concentration of phytochemicals in barley may be largely responsible for its health benefits.[17] Following are the phytochemicals present in Yava/barley have important role in prevention of various diseases.

2.1. Phenolic acid

These are present in barley in abundant quantity. Phenolic acids have been linked to chronic diseases prevention partly due to the presence of unsaturated carboxylic group[19]. The abundant content of phenolic acids in barley present in the hulled variety, indicates that it may also serve as an excellent dietary source of natural antioxidants with antiradical and antiproliferative potentials[20]

2.2. Flavonoids

Barley is a rich source of flavonoids. Clinical studies indicate that flavonoids may be the bioactive substances present in cereal grains responsible for the moderation of many diseases including cancer and coronary heart diseases.[21]

2.3. Lignans

Lignans are natural polyphenols widely distributed in the plant kingdom as natural defense substances. The structural and functional similarity of lignans to 17b-estradiol make them bioactive as phytoestrogens. Lignans have been suggested to induce a wide range of biological effects, such as antioxidant, antitumor, antiviral, antibacterial, insecticidal, fungistatic, estrogenic, and antiestrogenic activities, and protect against coronary heart disease.[22]-[24]

2.4. Tocols

Barley has some unique phytochemical properties, such as the presence of all eight tocol vitamers, which are usually not complete in some cereal [25]. Tocopherols and tocotrienols collectively known as tocols; are a class of lipid-soluble phytochemicals found in barley. Tocols are recognized for their antioxidant properties, especially their ability to inhibit lipid peroxidation in biological membranes[26]-[29] . In addition to their antioxidant properties, tocols found in cereals proffer anticancer and cancer suppression effects[30]-[31], induce the immune system[32], moderate the risk factors of cardiovascular diseases (CVD)[33]-[34] , and promote apoptosis induction[35] . One of the most striking discoveries about tocols is their ability to clear atherosclerotic blockages (stenosis) in the carotid artery, potentially reducing the risk of stroke[36].

2.5. Phytosterols

Barley is considered a good source of phytosterol. Phytosterols or plant sterol is an important structural component of plant membrane similar in structure to cholesterol, but different in configuration. Recent studies have shown that natural intake of dietary plant sterols can have a positive effect in decreasing serum cholesterol levels, protect against CVD, and prevent colon cancer.[37]-[42]

2.6. Folates

Folate is a group of phytochemicals that represents an essential nutrition component (vitamin B). It has been associated with cardiovascular health. Barley grains are enriched with folate. Including barley in daily diet will help in preventing and reducing the risk of cardiovascular ailments[17].

2.7. Beta-glucan

Barley and its products have bioactive compounds with antioxidative and immunomodulatory activities that are associated with cancer moderation. Most studies regarding the chemoprevention of carcinogenesis by barley have been in vitro and have mainly involved the effect of barley fiber, especially b-glucan, and the moderation of this disease[43].

Phytochemicals present in barley have high antioxidative activity which makes it a useful natural means for the prevention of diabetes and obesity development and progression. Furthermore, systemic, low-grade inflammation, especially in adipose tissue, is a trademark of obesity and diabetes. In addition to barley phytochemicals' antioxidant properties, barley phytochemical compounds have potent anti-inflammatory actions and could thereby moderate diabetes and obesity risk by this mechanism [44]-[46].

IV. CONCLUSION

Ayurveda states that diseases originate from unhealthy diet and can be cured by the healthy one. *Swasthahitakar dravya* is one of the three basic categories of *dravyas*. Regular intake of *Swastyahita aahar dravyas* will help to decrease chances of lifestyle diseases and to maintain a healthy life. Use of *Yava* in diet as mentioned in *Samhitas* will be helpful to keep away the threat of diseases. Modern researchers have also proved that phytochemicals present in *Yava* are beneficial to control lifestyle diseases. *Yava* is highly useful grain which should be consumed daily to promote health of individual and prevent disease condition.

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