

## NUTRACEUTICAL POTENTIAL OF SPICES IN UNANI SYSTEM OF MEDICINE WITH SPECIAL REFERENCE TO THEIR ANTIOXIDANT ACTIVITY

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### ABSTRACT

Spices have been used for culinary, medicinal, cosmetics and spiritual purposes for centuries. Due to their health effects spices have been used for a long time in several Unani formulations to treat various diseases. Spices are rich source of phytochemicals, many of which are biologically active with their antioxidant effects. Because of their good antioxidant activity, they have also been used to treat some ailments. Antioxidants are substances that prevent oxidation of other compounds or neutralize free radicals. In this review article, we have presented therapeutic uses, chemical constituents, important Unani formulations

with therapeutic indications, pharmacological activity as well as nutraceutical potential of some important spices which are frequently used in Unani system of medicine.

**KEYWORDS:** Spices, Nutraceutical, Antioxidant activity.

### INTRODUCTION

Nutraceuticals fall in between food and pharmaceutical segments. Spices have significant potential in nutraceuticals. Spices are aromatic, pungent substances used for flavourings, imparting aroma to foods and are used during the cooking. Besides the culinary usage, spices possess great significance by virtue of their medicinal value, as described in Unani classics. The notable uses of spices in very early times were in medicine, in the making holy oils and as aphrodisiacs. Hippocrates, Galen, Dioscorides, Ibn-e-Baitar and many other eminent Unani physicians employed them in the treatment of various ailments in the form of single and compound formulations.

Recent studies reveal that most of the spices are rich source of natural antioxidants. There is revival of interest in natural antioxidants after it was hypothesized that aging is the result of free radical induced damage to biopolymers which may be minimized with an optimal antioxidant systems in mammals. Thus, antioxidants prevent damage to body cells, enzymes and proteins caused by free radicals and eventually help in extending maximum life span. In recent years, biomedical scientists have evinced much interest on the role of free radicals in various diseases. Reactive Oxygen Species (ROS) have been implicated in over 100 diseases from Diabetes, Arthritis, Alzheimer, Parkinson's disease, Cardiovascular, Hepatic disorders, Cancer to AIDS and Infertility.

### AIMS AND OBJECTIVES

To review nutraceuticals potential of some spices which are used in Unani system of medicine with their antioxidant activity and to justify their use in Unani pathy.

### MATERIAL AND METHOD

A number of spices, traditionally used for thousands of year, are present as a group of herbal drugs in Unani system of medicine, proposed for their interesting antioxidant activities as well as nutraceutical potential. In the present review article eight spices viz. Amba (Mango), Badyan (Fennel), Basal (Onion), Filfil Daraz (Long Pepper), Hulba (fenugreek), Seer(Garlic), Zard Chob (Turmeric), and Zanjbeel (Ginger) are reviewed for their therapeutic uses, chemical constituents, important Unani formulations with their therapeutic indications and pharmacological actions which are shown in tabular form.

Unani/English Name	Botanical Name	Therapeutic Uses	Chemical Constituents	Important Unani formulations with Indications	Pharmacological actions
1. Amba (Mango)	<i>Mangifera indica</i> Linn.	Sunstroke, palpitation, colic, diarrhoea	Mangiferin, Vit. A, B, C & D, cycloartenol, L-amyrin, B-amyrin, camphene, myrcene, gallic acid, quercetin	Safoof-e-Ziabetus-Dolabi. <b>Indication:-</b> Diabetes mellitus	Cardio tonic, anti-viral, anti oxidant, anti inflammatory and anti diabetic
2. Badyan (Fennel)	<i>Foeniculum vulgare</i> Mill.	Indigestion, flatulence, colic, diarrhoea, infantile dysentery	Quercetin, anethole, fenchone, fericulin, anethole hydrocarbons	Jawarish Kamooni. <b>Indication:-</b> hyperacidity, flatulence, indigestion	Anti-oxidant
3. Basal (Onion)	<i>Allium cepa</i> Linn.	Strangury, syncope, amenorrhoea,	Essential oil, organic sulphide, catechol, protocatechuic acid	Majoon Piyaz. <b>Indication:-</b> spermatorrhoea,	Anti-oxidant

		leucoderma, scabies, sexual debility		premature ejaculation, sexual debility	
<b>4. Filfil Daraz</b> (Long pepper)	<i>Piper longum</i> Linn.	Dyspepsia, flatulence, cough, asthma, whooping cough	Piperine, pipartine, sesamin	Jawarish Jalinoos. <b>Indication:-</b> flatulence, palpitation	Anti-oxidant
<b>5. Hulba</b> (Fenugreek)	<i>Trigonella foenum-graecum</i> Linn.	Cough, sore throat, diarrhoea, strangury, boils	Trigonelline, choline, saponin, prolamin	Dawaul Misk. <b>Indication:-</b> palpitation	Anti-oxidant, anti-diabetic, hypolipidaemic, analgesic, anti-inflammatory
<b>6. Seer</b> (Garlic)	<i>Allium sativum</i> Linn.	Boils, fever, indigestion, paralysis, arthritis, sciatica	Allicin, diallyl sulphide, allisatin	Majoon Seer Alvi Khani. <b>Indication:-</b> paralysis, facial palsy	Anti-diabetic, anti oxidant, anti-atherosclerotic, anti hyperlipidaemic
<b>7. Zanjabeel</b> (Ginger)	<i>Zingiber officinale</i> Rosc.	Neurasthenia, paralysis, anorexia, dyspepsia, flatulence	Camphene, zingiberene, gingirol, shogaol	Safoof-e-Hazim. <b>Indication:-</b> indigestion	Antioxidant, anti ulcerogenic
<b>8. Zard Chob</b> (Turmeric)	<i>Curcuma longa</i> Linn.	Sprain, injury, conjunctivitis, asthma, cancer, skin diseases	Curcumin, demethoxycurcumin, bisdemethoxy curcumin	Marham Jadwar. <b>Indication:-</b> ulcer, lymphadenitis	Anti inflammatory, antioxidant, hepatoprotective, antitumor

## OBSERVATION AND DISCUSSION

It is evident from table that Amba (Mango), Badiyan (Fennel), Basal (Onion), Filfil daraz (Long Pepper), Hulba (Fenugreek), Seer(Garlic), Zard Chob(Turmeric), and Zanjbeel (Ginger) are rich source of natural antioxidant compounds on account of their flavonoids and biflavonoids. Seer has been noted to have cardioprotective effect also. It has also been observed that the antioxidant activities of these spices go hand in hand along with their hypolipidaemic and immunomodulatory properties. The biflavonoids present in these spices act as antioxidant by virtue of their free radical scavenging action. Seer, Amba and Hulba have significant antidiabetic and antioxidant activities will be of great use in the control of diabetes. Curcumin(a constituent of Curcuma) is considerably more active both as antioxidant as well as oxidative DNA clearing agent, than its to natural occurring derivatives namely demethoxycurcumin and bisdemethoxy curcumin. The biologically active natural flavonoids show antiviral, anticancer, antidiabetic and anti-inflammatory activities. The seeds of Hulba have been reported to have antioxidant property and study has been conducted on normal and diabetic rats. Aqueous extract of Seer promotes neuronal survival and its antioxidative property contributes to the mechanism of neuroprotection in focal ischemia. Extract of Zanjbeel healed the experimentally induce peptic ulcer by their antioxidant potential.

### **Nutraceutical Potential**

Nutraceuticals are fast emerging, especially in the developed countries. Today, this segment is fast emerging in the US Health Care Market and amounts to whopping US \$ 14.2 billion business. The segment covers vitamins and mineral health supplements, herbal health care product and a few specific biochemicals including selected hormones, enzymes etc. Nutraceutrical products are not directly aimed to curing any disease, rather they are meant for maintenance of health by relishing nutrients or restoring biological functions from time to time. Enterprising community placed many of the non specific health promoting herbal products under nutraceutical route. Interestingly, the standards set for these herbs as nutraceuticals are much broader than those set for a medicinal entity. Though a number of herbs are promoted under the nutraceutical route, the some products are of specific interest for those handling spices and aromatic plants.

Garlic is the most widely accepted herbal supplement. According to a survey, 11 percent of total US house hold use health supplements made up of garlic branded products have been made from garlic. One such product is Garlinase 4000, which is said to be useful in hyperlipidaemia and atherosclerosis. The product is claimed to have 5000 mcg of Allicin and 5000 mcg Alliin in single dose of 700 mg. powdered garlic, which, in turn, is equivalent to 4000 mg of fresh garlic.

Gingiber is actively promoted to maintain digestive functions and prevent travel sickness, while its oleoresin entered the nutraceutical route with high concentration of gingerols USP recognizes ginger and ginger powder only.

The oleoresin of turmeric is used extensively for invigorating the complexion of skin and also for its antioxidant properties.

### **CONCLUSION**

Many studies have been performed to identify antioxidant compound with pharmacologically activity and a limited toxicity. In this context, ethno pharmacologically represent the most important way possible of finding interesting and therapeutically helpful molecules. The phytochemical analysis reveals a large number of compound including tannic acid, flavonoids, tocopherol, curcumin, ascorbate, carotenoids, polyphenols etc, which have been shown to have potent antioxidant properties. The herbal (spices) mixture preparations of Unani system of medicine may have an antioxidant activity arising from their content of

plants with antioxidant principles that act probably in a synergistic way. This hypothesis along with the lack of toxicity can be important to understand their use in the past as well as nowadays.

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