



## Medicinal Importance of Hippophae Rhamnoides (SEABUKTHORN)

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### Abstract

Hunza valley is rich in natural resources. These types of natural resources have a great contribution in the environment; one of the main resources is plant resources, from ancient times until now it is used to cure such types of disease in humans as well as in animals. In medicinal plants, different types of secondary metabolites are present which play a vital role in many kinds of diseases and are used in industrial medicine. Maximum number of medicinal plants have their own specific activities; these include: antioxidant, anti-inflammatory, anti-parasitic, etc. Hippophae rhamnoides is one of the medicinal plants generally called seabuckthorn, which belongs to the family Elaeagnaceae. The length of seabuckthorn is about 6 meters, it has yellowish flowers, and the fruits are orange in color, which is only a female tree. The species came from Nepal and China. A number of scientific researchers work on the medicinal importance of Hippophae rhamnoides and they have proven its composition. Particularly in Asian countries because of its composition it has been used in folk medicine. Effectively it was used mainly in the treatment of lung, liver, digestive upsets and joint diseases, helps in inflammatory diseases, and to regulate blood flow, mucosal healing, it helps in treating sore throats and digestive system. Sea buckthorn leaves are important for calcium and magnesium. By using the sea-buckthorn berries, it improves the overall condition of the human body and increases its performance. Fruits and juice stimulate the secretion of gastric juices. It is mainly used for the treatment of cardiovascular diseases. Oil of sea-buckthorn is used in cosmetics, which is highly valued not only for its regenerating and antioxidant properties but particularly for the content of beta-carotene, quercetin and rutin.

**Key Words:** Hippophae rhamnoides (seabuckthorn); phytochemistry; Pharmacological Activities; Anticancer; culinary uses; adverse effect.

## Introduction

Sea buckthorn is distinctive plant. Due to its medicinal and nutritional potential, it has gained universal attention. It found in a cold region native, especially in Asia and Europe. Seabukthorn belongs to the family of Elaeagnaceae, especially in northern area of Pakistan it is an ideal and very important plant. It is an enduring plant; it can prevent corrosion of soil and renovation of land and useful for farmhouse protection via its strong reproduction of vegetation; apart from that, fruits of seabukthorn are used in medicinal purpose. Moreover, got a rich amount of medicinal compounds that is flavonoids, carbohydrates, vitamins, organic acids. Seabukthorn is currently farm in all parts of the world, just because of medicinal properties. Large number of bioactive substances are present in a plant and it will be as a great source. Hippophae rhamnoides refer to one of the oldest plants, seeing from ancient times. In 4<sup>th</sup> century BC, the therapeutic effects came to know. A man named as alexander who mainly use this shrub in his diet. Apart from that, the leaves of seabukthorn plant specifically their leaves and fruits is used to cure infected horse as well as patients. The second references refer to Jenkins khan who has used it in his campaigns during 13<sup>th</sup> century. To the end, the fruit of hippophae has biological studied first in 1929. Due to the study in the specific plant properly, it increases the health properties. Seabukthorn has an affirmative outcome in both animals and human health that is why most of the people focused on it. The entire plant of seabukthorn used to cure a disease, mainly the berries that has a huge number of bioactive substance. The main consideration is due to the great number of minerals, proteins, and fatty acids and appreciated for its antiviral, antibacterial, anticancer, antidiabetic effects.

Due to its helpful effect of seabukthorn, it is added in human as well as in animal's diet. Seabukthorn is a drug plant. It contains vitamins A, C, and E; some of the minerals are included such as K, Ca, Zn, and Na. the foremost vitamins in hippophae rhamnoids in vitamin C. mainly the fruit provides 400-600mg vitamins. Its structure differs due to climate change and the process used by which the plant extracted. Actually all parts of the plant got a valuable properties for example roots, leaves, berries and shoots. One% of flavonoids are present in the leaves and 10%, it contains tannins, and minimum 300mg vitamin C is present in it. Serotonin is rich in in both bark and leaves. Naturally, active compounds are present in hippophae rhamnoids such as alcohol, hydrocarbons, and glycosides. Through different projects Pakistan agriculture research council is sponsoring northern area of Pakistan for the purpose of its medicinal plants, one of them is seabukthorn, which is known as friend of the environment. Both in vitro and in vivo studies of seabukthorn plant have demonstrated. The anticancer properties of seabukthorn has been found in vitro as well as in vivo studies. At VII century BC the main properties of seabukthorn has known. Seabukthorn was first used as a drug in china after that in Chinese pharmacopeia it was properly listed. Seabukthorn is beneficial nutritionally just because it got hydrophilic and lipophilic compounds in their leaves and berries due to this compounds it has been grown worldwide.

## Effective Constituents Present In Seabukthorn

Seabukthoran has a large number of minerals and other bioactive substances present in its fruits. For example phenolic, steroids, and fatty acid. Especially the large components is flavonoid, which are present in their leaves and fruits. Flavonoids have physical properties on the blood vessel that is aorta, capillaries, veins and artery. Due to these physiological effects, the blood vessel needs the contribution of Vit-C, which stable the movement of Vit-C all over the body, and it decrease Vit-C oxidation. The function, which these substances perform, is, it control arteriosclerosis,

removing inflammation and lower the level of cholesterol. Just because of the maximum mineral substances in seabukthorn, it makes the shrub more valuable, and in the range of 23 to 282kg, it contain iron. When a crude is extract from the leaf, root, seed and other parts of hippophae rhamanoides through this extraction the antimicrobial and antioxidant activities take place. This can acquire by the process of liquid-liquid extraction, by using hexane, ethyl acetate, H<sub>2</sub>O. By using ethanol at 100 bar and 70 C the extract of specific crude gained through pressurized liquid extraction. Antimicrobial activity has tested against experimental organism, and the phytochemical substance has observed through colorimetric techniques. According to this technique it exposed that the crude extracts are energetic against gram + and gram – strains, and those root and seeds have essential vultures than that of stem and leaf extracts. A chromatographic technique named as high performance thin layer chromatography (HPTLC) it confirmed the presence of phenolic compound in the crude extract and fractions.

### **Anticancer**

Cancer is major issue globally and rapidly spreading these days. For the treatment of cancer, Seabukthorn plays a vital role. Especially the seed of Seabukthorn oil play a major role in cancer problem. It can improve life quality of the patients by reducing the side effects of the chemotherapy or radiation in cancer treatment. Cancer patient needs a maximum number of nutrient; seabukthorn can provide a complete supply of nutrient that improve the situation and eliminate waste through overall body. It also helps in promoting growth of tissue and improves gastrointestinal functional, increasing appetite, restoring liver and kidney functions. Seabukthorn has a large series of pharmacological activities, biological activities, as well as anticancer activities, but their molecular activities are undistinguishable, but may be these compounds are present in other different type of organs and other products mainly in the oil and juice. Seabukthorn also perform antitumor activity but it can recognized to antioxidant compounds, mostly phenolic compounds for example quercetin, flavonoids etc. these compounds protect cell from damage that lead to cancer or any sudden change in body. Chinese researcher work on seabukthorn and they came to know that from the bark, leaves ,juice many of the main problems can be solved such as cancer treatment, eye disease, cardiovascular disease and skin problem. The anticancer properties of seabukthorn includes apoptosis, cell cycle arrest and anti-inflammatory action. (Raj kumar, 2011).

### **Immune System**

Immune system is capable for the process of confrontation in the body of human being against any harmful pathogens. The seed of Seabukthorn provides maximum number of nutrients and bioactive compounds and many of them has considered features of immune system it contains phenols, terpenes, vitamins, iron, zinc, etc. (Raj kumar, 2011).

### **In Skin Problems**

Seabukthorn has a great contribution especially in skin problem, and studies proven that it can help us in various problems regarding to skin. Seabukthorn oils were used to help the recovery of skin damages and to support the curing of skin diseases. Nowadays the oil of seabukthorn used to help the recapture of various skin problems. Which includes burn, bad healing wounds and the bad effect of sun that damage the skin. Palmitoleic acid is ingredient of seabukthorn oil, which is a constituent of skin and is more valuable in treating burn and healing injuries. For the nutrition of skin, fatty acid plays a vital role when taken orally if appropriate amounts of seabukthorn oil used

up; for treating, it is a suitable method. Especially in Tajikistan, the flowers has been used as skin softener. (Raj kumar, 2011) Seabukthorn oil is used nowadays widely mainly for skin problem. The oil of seabukthorn also got the ultraviolet blocking activity and when we take it orally the fatty acid nourish the skin. (Alam Zeb Department of Biotechnology, 2004).

### **In Cerebral Cardiovascular Health**

Seabukthorn seed plays a vital role especially in cardiovascular systems. The principle perpetrator of this syndrome is arteriosclerosis, which is closely related to high blood fat. Seabukthorn oil enthusiastically reduces blood fat level and it support the vessels of the blood and improve the eminence of the vessels. (Raj kumar, 2011).

Moreover, it reduce stress and in rat, it reduce pathogenic thromboses. For the treatment of heart problem or heart attack seabukthorn play a vital role. It is also beneficial to decrease the cholesterol level in body. There is no any such damaging effecting of seabukthorn (Alam Zeb Department of Biotechnology, 2004).

### **Antioxidant**

Seabukthorn oil got maximum number of carotenoids. Omega-3 and omega-6 and it also have different types of elements including zinc, calcium, magnesium that are antioxidant with low molecular weight and it deactivate free radicals. It act as strong antioxidant and stable the maintenance of immune system. They are more effective. It really keeps the pathogens from dispersal. (Raj kumar, 2011) With the passage of time, the medicinal application of seabukthorn is increasingly day-by-day rapidly. (Alam Zeb Department of Biotechnology, 2004).

### **Culinary Uses**

Hippophae rhamnoides is a very useful plant, in which both their leaves and fruits is used. The fruits are preserved and then used in the food industry, in traditional medicine, as part of drugs or in the cosmetic industry. Especially for ruminants, the leaves can be used as, feed.

### **Adverse Effect**

The adverse effects from seabukthorn have been reported very few. In some people who had high blood pressure, headache, dizziness and swelling has noticed. Sometimes it caused rash it is just because when used on the skin to treat burn.

### **Conclusion**

Currently Seabukthorn represents a golden mean especially in pharmaceutical industries and cosmetic based industries and in food processing industries. From ancient time until now, seabukthorn has used as common medicine to curing many diseases, in human being as well as in animal.it is a great nutritional diet source; the main purpose of the assessment is to recap some momentous medicinal properties of hippophae rhamanoides. Herbs, shrubs, and tress mainly used as medicinal plants; especially their roots, shoots, fruit and leaves. It is an active compound against several disease. Seabukthorn is very important and it has great effect on human health. However, one of the main drawback is, Due to the presence of unsaturated fatty acid, the stability of oxidation remain low. Mainly the plant resources are used to cure different type of disease.

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