

Seabuckthorn: A Powerhouse Of Nutrition

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Introduction

Seabuckthorn (*Hippophaë rhamnoides*), belonging to the family: Elaeagnaceae, Order: Elaeagnales commonly known as sandthorn or seaberry is a unique plant used as the shrub. In India found in the icy heights of the Himalaya. It is a deciduous, thorny willow-like plant species native to Europe and Asia. In ancient Greece, leaves of seabuckthorn were used as horse fodder for improving weight and shiny hair, thus gaining the seabuckthorn genus a Graeco-Latin name '*Hippophae*' (Hippo – Horse; Phaos – to shine) (Lu, 1992). The fruits are processed and then used in the food industry, in traditional medicine, as part of drugs or in the cosmetic industry. The leaves can be used as feed, particularly for ruminants. Because of its tolerance against strongly eroded, nutrient poor and sometime salty soils, the plant is also used for land reclamation or as shelterbelt. Due to its immense use, it has aptly been called a wonderful plant, magic plant, super food, functional food and bank of vitamins.



Importance of Seabuckthorn

Seabuckthorn is a multipurpose fast growing species which is serving as a measure of biodiversity conservation, soil conservation, medicines, food, fodder and fuel wood. It has an extraordinary capacity to grow and survive under adverse conditions (-40 to 40° C) for the

farmers living in the mountains and offers the opportunity to maintain a sustainable livelihood. Seabuckthorn berry is very rich source of vitamins and is called treasure of bio-activity substance for these reasons, it is also called a wonderful plant.

Nutraceutical importance

Seabuckthorn fruit consists of sugars, sugar alcohols, fruit acids, vitamins (C, E, and K), polyphenols, carotenoids, fiber, amino acids, minerals, and plant sterols. Major sugars in sea buckthorn fruits are fructose and glucose, with total sugar content of 2.7-5.3 g/100 ml of juice. Typical sourness of the fruits is due to high content of malic acid (0.8-3.2 g/100 ml of juice) while astringency is related to quinic acid (1.2-2.1 g/100 ml of juice). Major sugar alcohol in fruit is L-quebrachitol (0.15-0.24 g/100 ml of juice). The concentration of vitamin C in sea buckthorn fruit, ranged from 100–300 mg/100 g fruit, which is higher than strawberry, kiwi, orange, tomato, carrot, and hawthorn (Bernath and Foldesi 1992; Lu 1992). Additionally, fruits have high concentrations of carotenoids, vitamin E and vitamin K. The most prevalent dietary minerals in sea buckthorn fruits are potassium (300–380 mg/100g), manganese (0.28–0.32 mg/100 g) and copper (0.1 mg/100 g).

The Principal Biochemical Constituents in Sea Buckthorn (Sources: Dwivedi *et al*, 2006)

Main component in Fruits	Contents
Colour	Yellow, orange to orange red
Shape	Round, oval, ovoid
Fruit Weight	10-16 gm /100 berries;
Vitamin C	100-300 mg/100 gm
Carotenoid	16-28 mg/100 gm
Flavonoid	120-1000mg/100 gm
Total Sugar	6.29%
Protein	34.6 %
Sodium	41.28 mg/kg fruit
Potassium	1499.96 mg/kg fruit
Calcium	383 mg/kg fruit
Iron	11.68 mg/kg fruit
Magnesium	47.7 mg/kg fruit

Zinc	0.94 mg/kg fruit
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Pharmaceutical Importance

About ten varieties of seabuckthorn drugs have been developed and are available in the form of liquid, powder, plaster, paste, pills, liniments, aerosols, etc. The most important pharmacological functions attributed to sea buckthorn oil are: anti-inflammatory, antimicrobial, pain relief, and promoting regeneration of tissues. Sea buckthorn oil is also touted as a treatment for oral mucositis, rectum mucositis, vaginal mucositis, cervical erosion, radiation damage, burns, scalds, duodenal ulcers, gastric ulcers, chilblains, skin ulcers caused by malnutrition, and other skin damage.

Cosmetical Importance

Many kinds of seabuckthorn cosmetics have been developed and tested in hospitals. It is proved that seabuckthorn beauty cream has positive therapeutic effects on melanosis, skin wrinkles, keratoderma, keratosis, senile plaque, xeroderma, facial acne, recurrent dermatitis, chemical corrosion and incontinence, as well as freckles. Other seabuckthorn extracts can improve metabolism and retard skin maturation.



Cosmetic Products of Seabuckthorn

Socio-economic Importance

Due to its unique biological features, seabuckthorn has been used in various ways to maintain the ecology of the Himalaya. In winter, the importance of seabuckthorn increases as it is almost the only food available for birds. Seabuckthorn provides long-term benefits in terms of maintaining the ecological equilibrium and improving the environment.

- Seabuckthorn is a very good fodder for sheep, goats and cattle as it contains many nutrients and bioactive substances.
- Leaves and fruit residue used as supplementary food can promote growth of animals and poultry.
- As fuel wood: In the Hindu-Kush Himalaya region, plant biomass is the most important source of energy.
- Seabuckthorn has proved to be a popular green energy plant because of its quality biomass. It is a good source of firewood.
- Nitrogen-fixing capacity: An 8 to 10-year old seabuckthorn forest can fix 180 kg of nitrogen/ha/year (Lu, 1992).

Seabuckthorn Products

H. rhamnoides fruits are processed in the food industry to different products such as jam, jelly, juices and syrup. Along with traditional foods, some new ones, such as condensed juice, mixed juice, seabuckthorn carrot jam, candied fruit, seabuckthorn cheese, seabuckthorn butter, tea and health protection drinks are also being produced. Some products are such as:

- Juice from sea buckthorn berries is a common drink in many parts of Asia and Europe, which is very high in protein, vitamins C and E, and organic acids.
- The leaves of the shrub can be air dried, eventually ground and used for tea.
- As a food additive: The pigments of seabuckthorn are widely used as a food additive. Seabuckthorn yellow consists of flavours, carotene and vitamin E. There are no toxic or carcinogenic side effects make it a very useful food additive.



Food product of Seabuckthorn