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Sea Buckthorn: Nature's Golden Superfruit

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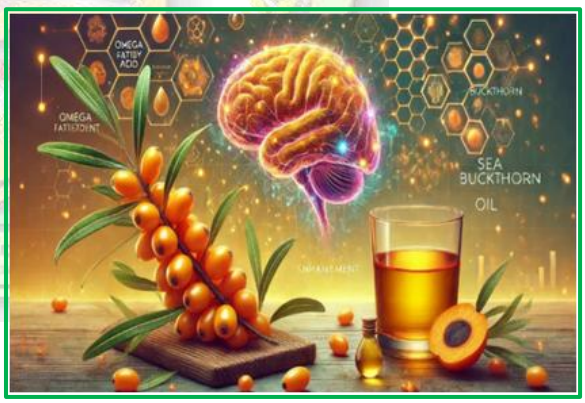
Sea buckthorn (*Hippophae rhamnoides* L.) is a deciduous shrub or tree that is also known as Siberian pineapple, sand thorn, sea berry, and sallow thorn. *Hippophae* L. originated in the Hengduan Mountains and East Himalayas and is widely distributed in the temperate regions of Eurasia. Every part of this plant (fruits, leaves, stems, branches, roots, and thorns) has been traditionally used in medicine, nutritional supplement, soil and moisture conservation, and the establishment of wildlife habitats. Therefore, sea buckthorn is popularly known as "Wonder Plant," "Golden Bush," or "Gold Mine. Sea buckthorn contains nearly 200 nutritional and bioactive compounds and is known as a "natural vitamin treasure house" and a "source of nutrition and health care". Sea buckthorn is therefore widely used by the food industry in the preparation of breads, yogurts, jams, beverages, teas and other products. The medicinal value of sea buckthorn has been recorded in the Tibetan medical classic "Somaratsa," dating back to as early as the first half of the eighth century. Sea buckthorn has been extensively exploited in the folklore treatment of slow digestion, stomach malfunctioning, cardiovascular problems, liver injury, skin diseases, and ulcers. In recent years, there have been numerous reports on the pharmacological activities of sea buckthorn, including its anticancer, anti-inflammatory, antimicrobial and antiviral activities, and its ability to act in cardiovascular protection. There is no doubt that sea buckthorn has great medicinal and therapeutic potential, which may be attributed to the fact that sea buckthorn contains several vitamins, carotenoids, polyphenols, and fatty acids. (Wang *et al*., 2022).



Applications

Sea buckthorn has a wide range of applications in the food industry because its berries are processed into juices, jams, jellies, syrups, wines, teas, candies, and functional foods enriched with natural antioxidants and vitamins. The fruit is increasingly incorporated into health-oriented products due to its high content of vitamin C, carotenoids, flavonoids, and essential fatty acids. In the nutraceuticals sector, sea buckthorn is used to manufacture dietary supplements, capsules, powders, and extracts that are marketed for supporting immunity, promoting general well-being, and providing antioxidant protection against oxidative stress.

Sea buckthorn oil extracted from the berries and seeds is widely used in the cosmetic industry for the production of skin creams, lotions, moisturizers, shampoos, anti-aging formulations, and wound-care products because of its moisturizing, regenerative, and antioxidant properties. The pharmaceutical industry utilizes sea buckthorn-derived compounds in research and product development owing to their reported anti-inflammatory, antimicrobial, antiviral, hepatoprotective, cardioprotective, and neuroprotective activities. Various studies have also investigated its potential role in supporting the management of chronic diseases and promoting tissue repair

Advantages

- Rich source of vitamin C, vitamin E, carotenoids, flavonoids, and other bioactive compounds.
- Contains significant amounts of beneficial fatty acids, including omega-3, omega-6, omega-7, and omega-9.
- Possesses strong antioxidant properties that help protect cells from oxidative damage.
- Exhibits anti-inflammatory, antimicrobial, and potential disease-preventive activities.
- Can be used in multiple industries, including food, pharmaceutical, cosmetic, agricultural, and environmental sectors.
- Supports soil conservation and erosion control in vulnerable landscapes.
- Improves soil fertility through nitrogen fixation.
- Adapted to harsh environmental conditions, including drought, cold temperatures, and poor soils.
- Provides economic opportunities through the production of value-added products.
- Nearly all parts of the plant, including berries, seeds, leaves, and bark, have potential commercial uses.
- Considered a sustainable and environmentally beneficial crop.
- Has growing consumer appeal as a functional food and natural health product.

Disadvantages

- Harvesting is difficult because the plant has dense thorny branches.
- Fruits are delicate and can be easily damaged during collection.
- Manual harvesting is labor-intensive and increases production costs.
- Fresh berries have a highly acidic, sour, and astringent taste that may limit direct consumption.
- Fresh fruits have a relatively short shelf life and require rapid processing or preservation.
- Nutritional composition can vary depending on cultivar, climate, soil conditions, and maturity stage.
- Processing technologies can be expensive due to the fruit's high acidity and oil content.
- Large-scale cultivation and mechanized harvesting remain challenging in many regions.
- Some health claims are based mainly on laboratory and animal studies and require further human clinical validation.
- Consumer awareness remains limited in many markets compared with more established berry crops.
- Commercial production and processing infrastructure is not yet well developed in several countries.
- Establishment and management of plantations may require specialized knowledge and investment.

Conclusion

Sea buckthorn is increasingly recognized as a multifunctional crop that combines nutritional, medicinal, environmental, and economic value. Its berries and oils are rich sources of bioactive compounds with potential benefits for human health, while the plant itself contributes to soil conservation and ecological restoration. However, challenges such as

difficult harvesting, product standardization, and the need for stronger clinical evidence must be addressed before its full potential can be realized. With continued research and technological improvements, sea buckthorn may become one of the most important functional crops of the future.

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