

# Seabuckthorn and Health Summary

## Legends associated with Seabuckthorn

Genghis Khan, the Mongol conqueror, was no dietician. Yet, way back in the 12th century, he touted the Seabuckthorn fruit as an invigorating energizer and even ordered his armies to eat it, to improve stamina and prevent altitude sickness.

It is said that a famous Tibetan doctor first explored the nutritional value of Seabuckthorn in the eighth century. For many centuries, the knowledge of the miraculous effects of Seabuckthorn was mastered by the Tibetans and Mongolians.

It is believed that in 12 BC, the ancient Greeks found that after a war, the deserted wounded horses survived miraculously after wandering in a jungle for a long time and even became stronger with glittering fur. The jungle was Seabuckthorn Jungle; hence the fruit has the botanical name 'Hippophae Rhamnoides' or shiny horse. Another legend says that ancient Greeks used the Seabuckthorn as a diet for race horses.

The leaves of Seabuckthorn leaves were the preferable food of Pegasus, the winged horse.

The Russians are said to have learnt about it some 300 years ago-though they started making use of its health-related properties only after World War II. Russian cosmonauts used a cream made from Seabuckthorn on the spaceship Mir to protect them from cosmic radiation and to serve as an oxygen supplement.

## Nutrients of Seabuckthorn

Seabuckthorn is a natural plant containing more than 190 kinds of bioactive substances which are much more abundant than in any other fruit or vegetable. Of these 190 nutrients, seabuckthorn contains the following:

- Vitamins A, K, E, C, B1, B2
- 22 Fatty Acids (Including Omega 3, 6, 7, and 9)
- 42 Lipids
- Organic Acids
- Amino Acids
- Carbohydrates
- Folic Acid
- Tocopherols
- Flavonoids
- Phenols
- Terpenes
- Tannins
- 20 Mineral Elements

The amounts of these nutrients found in seabuckthorn are discussed and charted in great detail in the remaining information of this document. Suffice it to say that the amounts of nutrients found in seabuckthorn are higher and more impressive than any other fruit or vegetable that we have researched.

## **Effects of Seabuckthorn**

### **Effects on treating cardiovascular system disease:**

Total flavones (TFH) which are extracted from seabuckthorn fruits and leaves is a kind of compound containing 7 kinds of flavones. Both domestic and abroad experts' research proved that TFH could strengthen the function of the heart and ability of systole to improve the diastoling function of cardiac muscle. TFH can resist myocardial ischemia that caused by the latter half of the hypothesis evidently. It also can narrow the area of myocardial infarction that caused by coronary artery' slogging and enhance the ability of enduring the situation of lacking of oxygen.

### **Effects on treating the liver disease:**

Seabuckthorn seed oil extracted from seabuckthorn seed with the advanced technology is a good health-care food in liver protection. Seabuckthorn seed oil have apparent restrain function on liver injury that comes from the effect of CL4, alcohol, paracetamol and the rising of GPT and GOT. At the same time, it can resist the rising of MDA's quantity. All these are at the backing of seabuckthorn's resisting the attachment of CCL3 and protecting liver cell membrane. Seabuckthorn seed oil can protect liver injury that comes from the effect of alcohol, paracetamol.

### **Seabuckthorn's medical function of anti-cancer:**

Besides using immunity mechanism or other means, seabuckthorn's anti-cancer function lies in that it can resist cancer cell and prevent the cause cancer factor from affecting in a direct way. When its diluted density is suitable for drink, seabuckthorn juice also can obstruct and prevent the cause cancer substances from affecting. Seabuckthorn flavones contains multi-phenols and, 5-TH, they all can anti-tumor in systematic ways. The test proved that the substances extracted from seabuckthorn could treat sarcoma, lymph cell, and leukemia obviously. It also can kill leukemia cell (K562) and stomach cancer cell (7901) of human being directly. At the same time, the extracted seabuckthorn can obstruct the cancer causing function of N-sub-nitro compound and aflatoxin. The mechanism test research shows that the extracted seabuckthorn can strengthen the immune function of human body and activate the devour function of cell. Moreover, it can enhance the activity of oxidize free amino -----SOD.

### **In curing the disease of stomach:**

Among Chinese folk, there is a long history of treating the disease of digestive system (including stomach, duodenal ulcer, and gastritis in digestion) by using seabuckthorn. Modern medical science research shows that seabuckthorn seed oil has good healing function to gastric ulcer caused by the methods of acetic and chronic reserpine. The B-sitosterol-B-D-glucoside of seabuckthorn seed oil is the effective substance of resisting gastric ulcer; it can protect stomach mucous and restrain gastric acid from secreting so that it will have the function of reducing his damage degree of stomach mucosa. Seabuckthorn seed oil also can fight back inflammation, engender muscle, and improve regenerating tissue and heal ulcer.

### **Anti-aging function:**

The effective substance SOD in seabuckthorn can clear free amino of human body and improve the function of immunity system, regulate immune active cell. SOD is an effective immune dose. It will improve human body's ability of resisting illness and postpone the aging of human body.

### **Resisting damage of radiation:**

The 5-TH in seabuckthorn can resist violent radiation and protect the main viscera (heart, spleen, liver, lungs

and marrow) effectively. It can resist acute damages of chronic radiation reduce the injury that the rays do to human body. Therefore, seabuckthorn oil is considered as the best health-care food for astronauts, for it can improve astronaut's rays resisting ability coming from universe.

#### **Renovating scald and burn wound:**

Seabuckthorn oil has magical effect on improving regenerate tissue and healing epithelial tissue. The test in clinical as well as in folk showed that it not only can treat scald, burns of light degree, but also can treat II or III degree scald, burns. You can apply 2-3 times on the injury skin every day and you will get satisfying result without scar in the skin generally. The good effect does to chemical burns, too. The seabuckthorn seed oil also can be used to treat skin injury, such as scald, burn.

#### **Protecting and beautifying skin:**

Seabuckthorn seed oil contains large quantity of free fatty acid, hydrocarbon, total sterol content, phosphatide, VE, VA, carotenoids which is several times higher than that of other plants. All these substances can protect skin. These substances can easily be absorbed by skin and can protect skin in a good way like sebaceous content. The sebaceous content in seabuckthorn seed oil and Vitamin E, A, provitamin A, forming a unified entity that contains rich nourishment and has apparent effects.

#### **Treating neurasthenia:**

The content of Vc in seabuckthorn pulp is the highest among fruit and vegetable. Large quantity of Vc can increase the oxygen in brain cell, improve the utilization of brain cell, remove tired and raise efficiency. Moreover, the rich amino acid (including 7 kinds of essential amino acid of human body) in seabuckthorn pulp can help the synthesizing of brain protein and of nervous transmitter, ACH, NA, DA, S-HT. It can elevate sleep quality and memory, keep nervous system operating normally. Seabuckthorn contains trace elements (copper and zinc), they can maintain the activity of different kinds of ferment and improve the synthesizing of brain protein and nucleic acid' metabolism.

## **Graphs and Comparison Charts of Nutrient Values of Seabuckthorn**

The following are charts graphs that represent the nutritional value associated with sea buckthorn:

### Sea Buckthorn Berries

Constituents of Sea Buckthorn Fruit (per 100 grams fresh berries)	
Vitamin C	200-1,500 mg (typical amount: 600 mg)
Vitamin E (mixed tocopherols)	Up to 180 mg (equal to about 270 IU)
Folic acid	Up to 80 mcg
Carotenoids, including beta carotene, lycopene, zeaxanthine; these contribute the yellow-orange-red colors of the fruit	30-40 mg
Fatty acids (oils); the main unsaturated fatty acids are oleic acid (omega-9), palmitoleic acid (omega-7), palmitic acid and linoleic acid (omega-6), and linolenic acid (omega-3); there are also saturated oils and sterols (mainly $\beta$ -sitosterol)	6-11% (3-5% in fruit pulp, 8-18% in seed); fatty acid composition and total oil content vary with subspecies
Organic acids other than ascorbic (e.g., quinic acid, malic acid; ingredients similar to those found in cranberries)	Quantity not determined; expressed juice has pH of 2.7-3.3
Flavonoids (e.g., mainly isorhamnetin, quercetin glycosides, and kaempferol; these are the same flavonoids as found in <i>Ginkgo biloba</i> .)	100-1,000 mg (0.1% to 1.0%)

Reference: Article Title “Sea Buckthorn” written by Subhuti Dharmananda, Ph.D., Director, Institute for Traditional Medicine, Portland, OR, USA

## Sea Buckthorn Oils

Main Constituents of Sea Buckthorn Oils from Seed, Fruit Pulp (juice), and Fruit Residue after Removing Juice. Figures are in milligrams per 100 grams or in percent (as indicated for breakdown of fatty acid composition).

<b>Ingredient</b>	<b>Seed Oil</b>	<b>Pulp Oil</b>	<b>Fruit Residue Oil</b>
Vitamin E	207	171	300-600
Vitamin K	110-230	54-59	-
Carotenoids	30-250	300-870	1280-1860
Total acids	11	38	-
Total flavonoids	-	-	550
Total sterols	1094	721	-
<b>Oil Profile</b>			
Unsaturated fatty acids	87%	67%	70%
Saturated fatty acids	13%	33%	30%

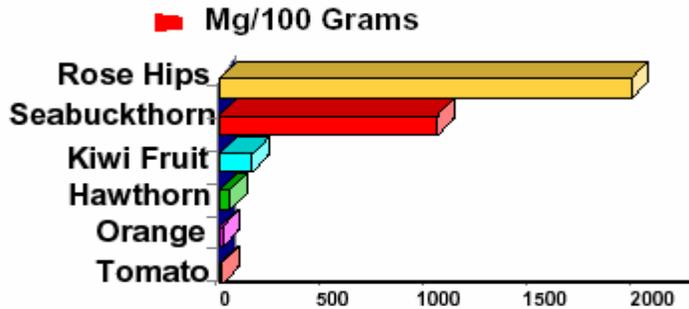
Reference: Article Title “Sea Buckthorn” written by Subhuti Dharmananda, Ph.D., Director, Institute for Traditional Medicine, Portland, OR, USA

## Chemical Analyses of Seabuckthorn Leaves

	Units	Air Dried
Ash	%	
Protein	%	25.04
Fat	%	
Carbohydrate	%	
Moisture	%	0.00
Fiber	%	
Catechin	mg/100g	54.71
Glucose	%	
Fructose	%	
Folic acid (Folate)	micro g/100g	1041.56
Ferullic acid	mg/100g	5.26
Total Flavin	mg/100g	756.44
Total Flavonoid	mg/100g	1896.90
Kaempferol	mg/100g	426.09
Quercetin	mg/100g	152.55
Isorhamnetin	mg/100g	177.80
Iron	ppm	143.08
Magnesium	ppm	2798.53
Manganese	ppm	73.86
Boron	ppm	39.66
Copper	ppm	7.27
Calcium	ppm	6417.67
Phosphorus	mg/100g	
Potassium	ppm	12519.73
Niacin	mg/100g	0.69
Riboflavin	mg/100g	1.15
Panthenic acid	mg/100g	0.94
Beta carotene	IU/100g	29216.20
alpha-tocopherol	IU/100g	40.40

Reference: Seabuckthorn International Inc.

## Comparison of Vitamin C Content of Various Food Plants



Reference: Sea Buckthorn Production Guide, Dr. Thomas S.C. Li and Colin McLoughlin

## Comparison of the vitamin contents of the Sea buckthorn Berry and other fruits and vegetables (mg/100g)

Fruit / Vegetable	A	B1	B2	C	K	Folic Acid
Seabuckthorn	11	0.04	0.56	300-1600	100-200	643
Kiwi Fruit	0	0	0	100-470	0	0
Hawthorn	0.82	0.02	0.05	100-150	0	0
Orange	0.55	0.08	0.03	50	0	0
Tomato	0.31	0.03	0.02	11.8	0	0
Carrot	4	0.02	0.05	8	0	0

Reference: Seabuckthorn International Inc.

## Study of wild berries found in Finland

### Nutrient composition per 100 grams of edible berry

CONSTITUENTS	CLOUD	BIL	LINGON	CROW	CRAN	SEA BUCKTHORN	ROWAN	RASBERRY
ENERGY, KJ	174.7	139.5	141.5	199	92	329	134	142.3
ENERGY, Kcal	41.9	33.3	33.8	48	22	79	32	34.2
PROTEIN, G	1.4	0.5	0.4	0.6	0.4	0.7	0.7	1
FAT, G	0.5	0.6	0.5	0.5	0.7	5	0	0.8
CARBOHYDRATE, G	7.8	6.4	6.8	6.3	3.5	6.3	6.3	4.1
DIETARY FIBRE, G	6.3	3.3	2.6	5.6	3.3	6	6	3.7
VITAMIN A	29	7.9	1.5		3.6	5.3	5.4	2.2
VITAMIN E	3.1	1.9	1.6		1	3.2	1.3	1.1
TIAMIN (B1)	0.06	0.04	0.05	0.03	0.03	0.03	0	0.03
RIBOFLAVIN (B2)	0.07	0.07	0.04		0.02	0	0	0.05
NIASIN	0.5	0.5	0.3		0.2	0	0	0.5
PYRIDOKSIN (B6)	0.1	0.06	0.01		0.04	0.11	0.1	0.06
VITAMIN C	100	15	5	11	1	165	98	38
SODIUM	1.5	0.3	0.2	4	0.9	0	1.4	0.7
POTASSIUM	0.2	0.1	0.1	0.1	0.2	0.1	0.3	0.2
CALCIUM	16	19	22	11	13	42	41	35
MAGNESIUM	29	9	9	0.05	8	30	24	25

Reference: Helsinki, Finland Study of Wild Berries Found in Finland

The following charts were taken from the Aubrey Organics website:

<http://www.aubrey-organics.com/about/articles/seabuckthorn.cfm>

### CONTENT OF VITAMINS C, E and b-carotene per 100 g (Table 1)

β-carotene (RE)	Vitamin C (mg)	Vitamin E (mg)
Carrots 1500	Rose-hips 650	Wheat germ oil 190
Rose-hips 430	Hot Chili peppers 360	Sea-Buckthorn berries* 180
Sweet red peppers 350	Sweet red peppers 250	Sunflower oil 50
Sea-Buckthorn berries 270	Sea-Buckthorn berries 220	Sunflower seeds 50
Apricots 250	Blackcurrants 200	Almonds 24
Pumpkin 250	Guavas 180	Filbert nuts 24
Tomatoes 200	Kiwi 74	Palm oil 22
Persimmon 200		* 80% from D-alpha-tocopherol

## Active ingredients of Sea-Buckthorn berries

typical amounts per 100 g of fresh berries

### (Table 2)

* vitamin E (up to 180 mg)	* flavonoids: in particular kaempferol, isorhamnetin as well as quercetin tri- and tetra-glycosides
* vitamin C (50-900 mg)	
* vitamin A (up to 60 mcg)	* carbohydrates (up to 3.6g)
* carotenoids: beta-carotene, gamma-carotene, lycopene (total 60-180 mg)	* essential minerals: K, Ca, Mg, Fe, Mn, Cu, Zn, Cr and Se
* vitamin B1 (up to 35 mcg)	* amino-acids (proteins)
* vitamin B2 (up to 55 mcg)	
* folate (up to 80 mcg )	* unsaturated and saturated fatty-acids (in the seeds 12%; in the pulp 9% of total): oleic, linoleic, linolenic and stearic acids
* fruit acids: chiefly malic acid, also acetic acid and quinic acid	