Clinical/Scientific evidence of Claims in Sibu Beauty products:

Sea Buckthorn Fruit Oil - internal and topical (more on topical in “topicalcream” doc)

HEALTH SKIN/ATOPIC DERMATITIS/MUCUS MEMBRANES/CARDIOVASCULAR/ANTI-ULCER/ANTI-INFLAMMATORY/ANTI-MICROBIAL/IMMUNE FUNCTION

"Helps to maintain mucous membranes and healthy skin. Has cardiovascular protective effect." (Structure-Function) [Yang et al, 1999; Yang et al, 2000; DerMarderosian and Beutler, 2006; Li et al, 2005; Mironov et al, 1983; Yang and Kallio, 2002; Johansson et al, 2000;]

"Helps to maintain mucous membranes and healthy skin. Has antioxidant effect. Has cardiovascular protective effect. Has immunomodulatory effects." (Structure-Function) [Yang et al, 1999; Yang et al, 2000; DerMarderosian and Beutler, 2006; Xing et al, 2002; Basu et al, 2007; Ji and Gao, 1991; Rui and Gao, 1989; Cheng, et al, 1994; Wang et al., 1989; Li and Tan, 1993; Ren et al, 1992;]

Sea buckthorn fruit oil has been shown in the literature to maintain mucous membranes and healthy skin.

Yang et al, (1999) conducted a placebo-controlled, double-blind study to investigate the effects of seed and pulp oils of sea buckthorn on atopic dermatitis. Forty-nine atopic dermatitis patients took 5 g (10 capsules) of seed oil, pulp oil, or paraffin oil (control group) by mouth daily for 4 months. Patients treated with sea buckthorn seed oil had increased levels of linoleic, alpha-linoleic, and eicosapentaenoic acids in plasma lipids. In the seed oil group, after 1 month of supplementation, positive correlations were found between improvement of atopic dermatitis symptoms and an increase in proportions of alpha-linolenic acid in plasma lipids and neutral lipids. Patients treated with the pulp oil had increased levels of palmitoleic acid in plasma phospholipids and neutral lipids. No changes in the levels of triacylglycerols, serum total, or specific immunoglobulin E were detected. Yang et al (2000) conducted a second placebo-controlled study to investigate the effects of seed and pulp oil supplementation on the fatty acid composition of skin glycerophospholipids of patients with atopic dermatitis. Sixteen patients ate 5 g of sea buckthorn seed oil, pulp oil, or paraffin oil daily for 4 months. Skin fatty acids were analyzed before and after treatment. The seed oil slightly increased the proportion of docosapentaenoic acid and decreased the proportion of palmitic acid in ski glycerophospholipids. Pulp oil treatment slightly increased the proportion of stearic acid. The levels of the other fatty acids remained stable. Their results indicate that the fatty acid composition of the skin phospholipids is well buffered against a short-term dietary change. The results, however, do require conformation because of the small number of patients.

"Effects on skin and mucosa have been associated with the sterols and long-chain alcohols in sea buckthorn" (DerMarderosian and Beutler, 2006). Animal and clinical studies have demonstrated that sea buckthorn oil has protective and healing effects against various damages on mucous membranes. Xing et al, (2002) showed that, compared with the negative control, oral administration of CO2-extracted seed and pulp sea buckthorn oils (7.0 ml/kg/day) significantly reduced ulcer formation in water-

immersion and reserpine-induced ulcer models in rats. Furthermore, administration of the oils sped up the healing process of acetic acid-induced gastric ulcers. Interestingly, Li et al (2005) showed that an ethanol extract of sea buckthorn showed anti-bacterial action against Helicobacter pylori, a human bacterial pathogen that has been recognized as a major factor involved in chronic active gastritis and gastric ulcer diseases. The results demonstrate that certain anti-bacterial phytochemicals may play a role in sea buckthorns gastric-treating properties.

Mironov et al (1983) has also demonstrated that topically applied sea buckthorn oil promotes the healing of wounds. Tissue-regenerative, anti-inflammatory and anti-microbial properties of sea buckthorn oil are some of the mechanisms that contribute to the effects observed. Furthermore, a review article by Yang and Kallio (2002) notes that topically applied sea buckthorn oil promotes healing of various wounds, burns and irradiation dermatitis in skin.

It has been shown in the literature that sea buckthorn fruit oil has cardiovascular protective effect.

Johansson et al (2000) in a double-blind, randomized, and controlled (fractionated coconut oil) study investigate the effects of the combined sea buckthorn oil on plasma lipid and glucose levels as well as on platelet aggregation in normolipidemic subjects. They administered sea buckthorn oil and fractionated coconut oil (control) 5 g per day for a period of 4 weeks in a random order (wash-out 4-8 weeks). Phospholipid fatty acids, plasma lipids, and glucose were unaffected by sea buckthorn oil supplementation. Instead, a clear decrease in the rate of adenosine-5'-diphosphate-induced platelet aggregation and maximum aggregation were found.

In conclusion there is evidence from clinical trials, animal and in vitro studies that sea buckthorn fruit oil helps to maintain mucous membranes and healthy skin, and has cardiovascular protective effect.

Sea buckthorn seed oil has been shown to have a potent antioxidant and cardioprotective activity. Basu et al (2007) have shown that sea buckthorn seed oil feeding to normal rabbits for 18 days caused a significant decline in plasma cholesterol, LDL-C, atherogenic index (AI) and LDL/HDL ratio. The HDL-C levels, HDL-C/TC ratio (HTR) and vasorelaxant activity of the aorta were significantly increased The TC, TG, LDL-C and AI were significantly declined following seed oil administration. The acetylcholine-induced vasorelaxant activity was significantly decreased in cholesterol-fed animals and could be restored to that of normal values by seed oil administration. The authors suggested that supercritical CO2 extracted SBT seed oil has significant anti-atherogenic and cardioprotective activity. Also, oils from seeds and soft parts of sea buckthorn berries have been shown to slow down the oxidation process and to stabilize membrane structure in animal models (Ji and Gao, 1991; Rui and Gao, 1989).An eightweek eight week feed supplementation with sea buckthorn seed oil decreased the malondialdehyde (MDA) levels in erythrocyte membrane and in the liver of rats (Ji and Gao, 1991). Intragastrically given seed oil (Cheng, et al, 1994) protected against chemically induced liver damage in animal models.

Effects of sea buckthorn seed oil on immune functions have been investigated mostly with experimental models in mice.Intrap eritoneal injection of sea buckthorn seed oil improved the immune functions of normal mice (Wang et al., 1989).Intra gastrically given seed oil showed antagonistic effects against cyclophosphamideinduced immune

suppression in mice (Ren et al, 1992).Sea buckthorn seed oil was effective as an adjuvant treatment for improving the immune function of cancer patients receiving chemotherapy (Li and Tan, 1993).

In conclusion there is evidence from clinical trials, animal and in vitro studies that sea buckthorn seed oil helps to maintain mucous membranes and healthy skin, has antioxidant, cardiovascular protective and immunomodulatory effects.

PHARMACODYNAMICS

Fruit pulp/peel oil contains a high level of palmitoleic acid (16:1n-7, up to 43%) (Jablczynska et al, 1997; Zadernowski et al, 1997; Ul'chenko et al, 1995), which is not common in the plant kingdom. The high content of carotenoids (up to 7 g/kg), tocopherols (up to 7 g/kg), and phytosterols (up to 20 g/kg) (Chen et al, 1990; Fu et al, 1993; Ge, 1992) are special characteristics of the oil from pulp/peel of the berries. Yang et al (1999) in a placebo-controlled, double-blind study of effect of sea buckthorn seed and pulp oils on atopic dermatitis proposed that the mechanism of action for positive effects in improvement of atopic dermatitis symptoms with an increase in proportions of alpha-linolenic acid in plasma lipids and neutral lipids was inhibition of the synthesis of the 4-series leukotrienes from arachidonic acid and an increased synthesis of the 5-series leukotrienes. Mironov et al (1983) noted that tissue-regenerative, anti-inflammatory and anti-microbial properties of sea buckthorn oil are some of the mechanisms that contribute to healing of wounds.

One special feature of sea buckthorn berry is the high oil content in the soft parts, in addition to oil in seeds. The oil content in seeds is commonly _10%, although higher values (up to 15-16%) have been reported in some cultivars and wild berries from the Altai, Czech Republic and Tajikistan (Kallio et al, 2002; Kallio et al, 2000; Yang, 2001; Yang and Kallio, 2002). Sea buckthorn seed oil is rich in the two essential fatty acids, linoleic (18:2 n-6) and a-linolenic (18:3 n-3) acids. The proportions of the two fatty acids in seed oil are commonly 30-40 and 20-35%, respectively.Other major fatty acids in seeds are oleic (18:1 n-9, 13-30%), palmitic (16:0, 15-20%), stearic (18:0, 2-5%), and vaccenic (18:1 n-7, 2-4%) acids (Kallio et al, 2000, 2002; Yang, 2001; Yang and Kallio, 2002). Yang et al (1999) in a placebo-controlled, double-blind study of effect of sea buckthorn seed and pulp oils on atopic dermatitis proposed that the mechanism of action for positive effects in improvement of atopic dermatitis symptoms with an increase in proportions of alpha-linolenic acid in plasma lipids and neutral lipids was inhibition of the synthesis of the 4-series leukotrienes from arachidonic acid and an increased synthesis of the 5-series leukotrienes.

PHARMACOKINETICS

According to Yang et al (1999) sea buckthorn seed oil increased the proportion of alpha-linolenic acid in plasma neutral lipids and increased linoleic, alpha-lenolenic, and eicosapentaenoic acids in plasma phospholipids in patients receiving 5 g of seed oil daily. The rise in these fatty acids in the plasma was associated with improvements in the symptoms of atopic dermatitis, thus giving an indication that there is a pharmacological basis for sea buckthorns effect. In a clinical trial, sea buckthorn flavonols were rapidly absorbed when administered with oatmeal porridge and a small amount of sea

buckthorn oil seemed to increase the bioavailability of additional sea buckthorn flavonols (Suomela et al, 2006).

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