Seabuckthorn
Ancient Food of the East
Future Food of the West!

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Current and Future Food Trends

Eighty percent of Canadians agree that food and eating are an important part of their lives and that nutrition is a prime concern when making food and eating decisions. Most consumers now believe that food can have a potent impact on health. The movement towards better health through improved nutrition has spurred the development of new foods, food supplements, herbal remedies and other enhanced food products. The "natural products" industry, which includes fresh and organic foods and beverages, dietary supplements and "all natural" personal health care products, grew 25% in 1996 and continues to experience ongoing growth.

Food trend futurists predict that by year 2006, a shift in focus from the health aspects of food to the entertainment and pleasure associated with food will occur. Future consumers will want specialized products and services. The consumer will expect a blend of pleasure and medicinal, customized to individual needs. Diversity will still matter, but self-care and the combination of the pleasure and medicinal, is likely to become very important in the future.

Current and future trends for new foods such as seabuckthorn bode well. Seabuckthorn, as a crop and future food source, has been gaining attention because of its nutritional benefits. However, because seabuckthorn is native to Asia, its nutritional benefits remain relatively unknown in North America.

Seabuckthorn has been reported to contain more than 190 compounds in the seeds, pulp, fruit and juice. These compounds include fat soluble vitamins (A, K, E), 22 fatty acids, 42 lipids, organic acids, amino acids, carbohydrates, vitamins C, B1, B2, folic acid, tocopherols and flavanoids, phenols, terpenes and tannins. It also contains 20 mineral elements. Many of the substances that area found in seabuckthorn are known to have beneficial effects on health. These will be discussed in the following text.

1. Heart Disease

Heart disease remains one of the leading causes of death in North America. Dietary factors are known to increase or decrease the risk for heart disease. The most widely recognized factor is dietary fat. Not all dietary fats increase the risk of heart disease. Monounsaturated fats may decrease the risk of heart disease by reducing the levels of LDL cholesterol ("bad" cholesterol). Omega-3 fatty acids are associated with decreased risk of heart disease because of their action to lower triglycerides. In addition, omega-3 fatty acids (i.e. linolenic acid) reduce the risk of stroke by reducing blood pressure and altering platelet aggregation, which reduces the tendency of the blood to clot.

Polyunsaturated fatty acids (i.e. linolenic acid) are beneficial in that they decrease total and LDL cholesterol and thus decrease the risk of heart disease.

In examining the fatty acid profile of seabuckthorn seed supplied by Canada Seabuckthorn Enterprises Limited [CSEL] (POS Analytical Services Laboratory Report), it contains nearly 90% unsaturated fat. It is high in both linolenic acid and linoleic acid relative to most other plant sources. The high level of unsaturated fat makes seabuckthorn seed appropriate for decreasing the risk of heart disease.

Antioxidants also act to reduce the risk of heart disease by preventing the oxidation of LDL cholesterol. Oxidation damage of the fat results in atherosclerotic lesions in blood vessels and the progression of heart disease. It has been well established in the scientific literature that heart attack risk is reduced by the antioxidant vitamins A, C and E, with Vitamin E being most protective against heart disease. Beta-carotene and antioxidant phytochemicals are also believed to be protective.

Seabuckthorn contains vitamins A, C and E, with the pulp and fruit being especially high in vitamin C (700-800mg/100g). Antioxidant phytochemicals in seabuckthorn include terpenes (carotenoids), phenols (flavonoids) and organic acids. These would be expected to also reduce the risk of heart disease. Yang Cunshe (Hippophae, 1995, vol.8, No. 1, pp 33-35) presents a clinical study which seems to support the beneficial effects of seabuckthorn in decreasing total cholesterol and triglycerides and by increasing HDL. Additional clinical studies would be helpful in providing conclusive evidence for the role of seabuckthorn in reducing heart disease, however, preliminary results are promising.

2. Cancer

Rivaling heart disease, cancer is also a leading cause of death, with 70% of all cancer attributed to diet. Dozens of scientific studies have validated key nutrients which are protective against cancer. Antioxidants such as vitamins A, C and E, phytochemicals such as carotenoids, flavonoids, and many other plant constituents play a role in cancer prevention.

Seabuckthorn is a source of many of these important nutrients for cancer prevention, Xu Mingyu, in Hippophae, Vol. 7, No. 4, pp41-43, refers to the rich nutrient ingredients and biologically active compounds which could have anti-cancer properties. Well-designed clinical studies with seabuckthorn are needed to validate its effects on cancer.

3. Immune System

As previously noted, seabuckthorn contains an appreciable amount of the omega-3 fatty acid, linolenic acid. According to the POS Analytical Laboratory values, the level of linolenic acid is 32.3% and that of linoleic acid, 40.8%. The ratio of omega-6 fatty acid to omega-3 fatty acid is thus roughly 1:1. Flaxseed, recognized as being the richest plant source of omega-3 fatty acid, has a ratio of 0.3:1. The typical North American and Western diets have dietary omega-6 to omega-3 ratios in the range of 10:1 to 25:1. This is far different from Paleolithic

diets in which omega-3 fatty acids predominated. Health Canada recommends a ratio of 4:1 to 10:1, reinforcing the need to increase dietary omega-3 fatty acids relative to omega-6.

Recent research has shown that linolenic acid influences the immune system through its effects on membrane phospholipids, and the production eicosanoids and cytokines. Because of its effects on immunity, it is proposed that linolenic acid may have a useful role in treating disorders in which the immune response is hyper-stimulated (i.e. rheumatoid arthritis, psoriasis, multiple sclerosis and systemic lupus.) Seabuckthorn, because of its high levels of omega-3 fatty acid, could become a major player in the efforts to increase levels of dietary omega-3 fatty acid. This is especially true considering that another rich source of omega-3 fatty acids is fish, a natural resource that is rapidly becoming depleted.

Vitamin C has been shown to improve immune status in humans. In the elderly, the optimum level of vitamin C was determined to be close to 100 mg per day, a value in excess of the government's Recommended Nutrient Intake (RNI). Seabuckthorn contains from 300 to 1600 mg of vitamin C per 100 grams. In addition, seabuckthorn contains vitamins E and A, which are also important for a healthy immune system. Evidence continues to mount supporting the increased need of these nutrients for all age groups and especially in the elderly, to preserve or enhance immune function.

Omega-3 Fatty Acids — Other Considerations

The previous text has outlined the importance of omega-3 fatty acids in reducing the risk of heart disease and stroke and its role in immune function. During pregnancy and lactation, Health Canada recommends that women increase their omega-3 fatty acid intake. DHA, which is an omega-3 fatty acid, is incorporated into the brain lipids and retina during the last trimester of pregnancy and in the first year of life. DHA is mainly found in fish oils, but can be made in the body from dietary linolenic acid, its omega-3 precursor.

It is interesting to note that in the body, linoleic acid (omega-6) interferes with the conversion of linolenic acid to its omega-3 relatives, DHA and EPA. The omega-6 fatty acids constitute a far greater proportion in the typical North American diet than the omega-3s. Therefore, nutrition experts area recommending that individuals increase their consumption of omega-3 fatty acids to omega-6.

Human breast milk contains significant amounts of linolenic acid. Prior to the 1990's, most infant formulas contained low levels of this omega-3. Recognizing the need for this fatty acid, infant formula companies began adding linolenic acid to their formulas. The main source of this fatty acid is soybean oil. Consideration is also being given towards the addition of DHA. It is unclear as to whether dietary linolenic acid alone is sufficient to meet the essential fatty acid needs of infants. However, it is definitely known that dietary omega-3 fatty acids are critical for the development of the nervous system and vision in infants, especially pre-term infants.

Seabuckthorn as a Dietary Constituent

Because seabuckthorn is rich in omega-3 fatty acids, vitamin C, vitamin E, trace minerals, and other phytochemicals, it can certainly contribute nutritionally to our diets. Given the trend towards viewing food as a potent influence on health and "food therapy", product from Canada Seabuckthorn Enterprises Limited could be successfully introduced into the marketplace in a variety of ways. Seabuckthorn could be incorporated into energy bars (snack or meal replacement), baked goods, snack crackers, cereals, yogurt, carbonated and non-carbonated health beverages, teas, gourmet sauces and jams or dried snacks. Market analysis, consumer trends and creativity would all assist in product selection and development.

CSEL product has the potential to be marketed and recognized as a healthy food because of its nutrient composition. If it can economically be grown as an organic crop, it would be advantageous as consumers are increasingly seeking out "natural" and "organic" food options.

Perhaps seabuckthorn could be encapsulated or sold as a food supplement, much as herbal remedies are promoted. The seed oil could be extracted, put into gel caps and promoted as an excellent source of omega-3 fatty acid. Evidence continues to accumulate regarding the importance of omega-3s to human health. Dietary restriction of fat as a result of its link to heart disease, cancer and obesity has resulted in very low levels of essential fats in our diets. This trend is beginning to reverse as consumers develop a more relaxed attitude towards nutrition, and as the evidence in favor of essential fats, particularly omega-3 begins to mount. Sales of encapsulated fish oils and flax oil have been strong. Too, consumers are being more selective in their purchases of salad and cooking oils, adding flax oil to their shopping list because of its health benefits.

CSEL seabuckthorn oil could also be a source of essential fatty acids in infant formula or infant foods. Essential fatty acids are also required for specialized liquid formulas fed to critically ill patients. Thus, pharmaceutics could be another potential avenue for the oil. Whether extracts of seabuckthorn or dried, ground seabuckthorn can be promoted as cancer therapy requires extensive research over many years.

Fiber in seabuckthorn has not been addressed because of lack of data. The amount and type of fiber bears determining because of the many health benefits associated with dietary fiber. Dietary fiber helps to lower blood cholesterol, regulate blood sugar, protect against certain cancers and eliminate constipation. Components of the pulp or fruit likely contain some fiber.

Summary

In conclusion, seabuckthorn has potential as a dietary constituent in North America. It is nutrient-rich and has many advantages nutritionally. In an era where nutrition and health are emphasized, it could be promoted and consumed for its health advantages. Too, individuals are seeking many alternatives not only to optimize health, but also to prevent or treat illness. Modern remedies are being questioned; folk remedies from years ago are being revisited. What an opportune time to introduce the Western world to this centuries-old plant, long valued for its nutritional and medicinal benefits in Eurasia.