

## **LICORICE FLAVONOID EXTRACT (LIFE®)**

(A Potent Natural Antioxidant)

Licorice root is one of the most widely used natural products in the world, being safely used for thousands of years both in the East and West. Derived from *Glycyrrhiza spp.*, especially *G. glabra* and *G. uralensis* (Family *Leguminosae*), it is now used extensively as a flavoring agent in processed foods and to mask unpleasant tastes of prepared medicines. In traditional Chinese usage, licorice is especially versatile; there, its uses are in four major areas: (1) to rid the body of toxins; (2) to complement other herbs in herbal formulas; (3) to treat ulcers; and (4) as expectorant, antitussive, mild laxative and in anti-aging.<sup>1,2</sup>

Until recently, the intensely sweet glycyrrhizin was generally recognized as the major active ingredient of licorice root. Although glycyrrhizin does indeed show many of the effects of licorice (including anti-ulcer, detoxicant, anti-allergic, etc.), it is also responsible for the major toxic side effects of licorice, such as sodium retention and potassium excretion, causing edema and hypokalemia. Fortunately, we have now discovered that glycyrrhizin is not the only major active principle of licorice. The flavonoids also play a major role and without the toxic side effects of glycyrrhizin.<sup>3</sup> In fact, a number of flavonoid and deglycyrrhizinated licorice extracts have entered the market during the past twenty years for use in ulcer treatment. But these extracts still contain significant amounts of glycyrrhizin and their flavonoid contents are not in high concentrations. In contrast, the newly developed LIFE® contains little or no glycyrrhizin; it is a concentrated extract of flavonoids prepared from Chinese licorice using a proprietary process.

**Unique Properties of Licorice Flavonoids.** Bioflavonoids have been shown in recent years to have a wide range of biological activities, including cardiovascular, antioxidant, antiinflammatory, antiallergic, detoxicant and antimicrobial, etc. Depending on their sources, these effects vary in kind and intensity. Licorice flavonoids are among the strongest (if not the strongest) antioxidant and anti-ulcer substances so far discovered.

**Anti-ulcer Effects:** Chinese and Japanese scientists have known the anti-ulcer, detoxifying and antioxidant activities of licorice flavonoids for at least two decades. The anti-ulcer effects have been confirmed in humans and products containing licorice flavonoids are now being marketed in China and Japan for treating ulcers. Their effects are reported to be at least equal to those of Ranitidine, but without the toxic side effects of the latter.

**Antioxidant Effects:** Although flavonoids from various sources have been shown to have antioxidant properties, evidence of strong antioxidant effects of licorice flavonoids was only recently reported.<sup>4</sup> Using various test methods, researchers at the Chinese Academy of Science in Beijing and the Inner Mongolian Medical College in Huhhot found licorice flavonoids to have exceptionally strong antioxidant effects that were over 100 times stronger than that of vitamin E. Thus, in the xanthine/xanthine oxidase system for testing oxygen free radical scavenging effects using the electron spin resonance technique, a dose of 2.58 mg/ml of licorice flavonoids was found to scavenge more free radicals than 258 mg/ml of vitamin E (20.6% vs. 11.2%). Based on this report, flavonoids from licorice are currently the strongest natural antioxidants known.

Toxicity: Licorice flavonoids have very low toxicity. This is not surprising because they are derived from a widely used herb whose only toxicity seems to be due to glycyrrhizin. Acute toxicity (LD50) of licorice flavonoids in mice is 845 mg/kg i.p. Chronic toxicity studies in dogs showed them to be devoid of any toxic effects on the heart, liver, kidney and other organs. They also did not cause any change in the levels of serum electrolytes ( $K^+$ ,  $Na^+$ , and  $Cl^-$ ) as does glycyrrhizin.

Suggested Uses: In drinks, juices, capsules, tablets and other formulations; also in skin care cosmetics (lotions, creams, etc).

Use Levels: 20-100 mg/day for oral products and 0.01%-0.2% in cosmetics

References:

1. A.Y. Leung and S. Foster (1995). Encyclopedia of Common Natural Ingredients Used in Food, Drugs and Cosmetics, 2nd Ed. Wiley-Interscience, New York.
2. A.Y. Leung (1984). Chinese Herbal Remedies. Universe Books, New York.
3. A.R. Gaby (1988). Deglycyrrhizinated Licorice Treatment of Peptic Ulcer. Townsend Letter for Doctors (July), 306.
4. H.S. Ju et al. (1989). Effects of Glycyrrhiza Flavonoids on Lipid Peroxidation and Active Oxygen Radicals. Acta Pharmaceutica Sinica, 24(11), 807-812.