
LICORICE ROOT

Age Old Medicine Unites With New Technology to Treat Canker Sores

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Licorice has a long history as a healing agent, and even after 4000 years it still has important new clinical uses.

HISTORY

Ancient Egyptian healers began using Licorice root (Glycyrrhiza) 4000 years ago and it has been continuously used by practitioners in both Eastern and Western medicine ever since. Hippocrates described licorice root in his medical text and it was a staple of Western medicine through Greco-Roman times. In the Middle Ages, licorice root was utilized in Arabian medicine and its applications were summarized in the works of Avicenna. An important part of traditional Chinese medicine (TCM), licorice root was mentioned in the first recorded Chinese dispensary written in 300 B.C. Considered to be non-toxic and among plants with the lowest side effects, it was recommended as a cure for injury, for swelling, for its detoxification effect, and for improving health and lengthening one's life span.¹⁰

Today, licorice root extract is the most frequently used substance in TCM and is recommended to treat peptic ulcer, skin rashes, and stomach aches. It is used to treat colds, coughs, sore throats as well as respiratory conditions such as allergies and bronchitis because it functions as a demulcent to soothe and coat affected areas.

In Japan, licorice root has been used medicinally since the eighth century. It has become the most widely used drug in their traditional form of medicine, referred to as "Kampo" and, in modern Japanese medicine, licorice root extracts have been part of the primary treatment of hepatitis for the last 60 years.

In modern times, it has been used in the West as a prescribed treatment for stomach ulcers and now for canker sores.

LICORICE ROOT EXTRACTS CONTAIN FLAVONOIDS

Chemically, licorice root (Glycyrrhiza) extract (GX) includes flavonoids. Flavonoids are synthesized by plants and have a common chemical structure possessing 15 carbon atoms organized as two benzene rings joined by a linear carbon chain. This group of plant phenols includes more than 6,000 different substances that are found in virtually all plants and are responsible for many of the plant colors. This is the reason flavonoids were classified as plant pigments when discovered in 1938 by Albert Szent-Gyorgyi. It is now understood that polyphenols in plants serve many functions including: antioxidant (protection from UV light and free radicals), protection from insects, fungi, viruses and bacteria, and plant hormone controllers.

Research relating to humans has shown that flavonoids have potent antioxidant, anti-inflammatory and antiviral capacity. They alter enzyme activities affecting cell division, proliferation, platelet aggregation and immune response. Flavonoids have also been investigated for their anticarcinogenic activities. Various flavonoids, most notably the isoflavonoids, are able to bind non-trivially to estrogen receptors and possess estrogenic or antiestrogenic activities. People ingest flavonoids in fruits, vegetables, nuts, seeds and in teas made from flowers, leaves, and bark. Licorice root is particularly rich in flavanoids and this is probably a relevant factor in its history as a medicinal plant capable of treating a variety of conditions.¹⁵

ANTI-INFLAMMATORY FUNCTIONS OF LICORICE ROOT

While it has been known for over 2000 years that licorice root (Glycyrrhiza) extract (GX) promotes the healing of ulcers of the stomach and mouth³ the first scientific explanations for this began with studies in the 1950's. It was these studies that showed that glycyrrhetic acid in GX has an anti-inflammatory effect acting like a glucocorticoid and a mineralcorticoid.³

These research efforts were exploring potential treatments for stomach ulcers and lead to the development of the glycyrrhetic acid analog carbenoxolone (Biogastrone,). Carbenoxolone was shown to impact prostaglandin levels by inhibiting two enzymes, 15-hydroxyprostaglandin dehydrogenase and Δ^{13} -prostaglandin, that are important in metabolism of prostaglandin.

Prostaglandins promote healing of ulcers by stimulating mucous secretion and cell proliferation.³ Its use as one of the primary treatment approaches to stomach ulcers declined after the introduction of cimetidine (Tagamet) even though a number of studies showed it to be as effective.^{6,7,8,9}

More recent research has found that the molecule that gives GX its sweet flavor, glycyrrhizic acid, a glycosylated triterpene, and its aglycone, glycyrrhetic acid, function to inhibit the enzyme 11 β OHSD that converts hydrocortisone to cortisone and thereby increases the local glucocorticoid concentration.³

ANTI-VIRAL EFFECTS

We now are aware that licorice's wide spread usage as a medicine occurred because it not only functions as an anti-inflammatory agent but it also can impact some illnesses caused by viruses. For example, in one study of the efficacy of GX in treating hepatitis, Japanese patients with hepatitis C who received intravenous treatment with

glycyrrhizin, cysteine, and glycine for an average of 10 years were significantly less likely to develop liver cancer and cirrhosis (progressive liver failure) than those who received placebo.² This study supports the clinical use of Glycyrrhiza extract as an element of the treatment for chronic hepatitis which the Japanese have done for many years.

There have been some very preliminary and suggestive in vitro (test tube) studies showing GX inhibiting the growth of viruses, including herpes simplex, and Varicella zoster, and of Japanese encephalitis.^{1,13,14} An interesting study of 3 people with HIV suggested that intravenous glycyrrhizin may prevent replication of HIV, but this study is only suggestive of further research in this area and no larger study has duplicated these findings.¹¹

Recent research is beginning to identify the manner in which GX may serve to affect a virus. In an in vitro study of a specific herpes virus cell, Kaposi sarcoma-associated herpes virus (KSHV), glycyrrhizic acid was shown to have a unique effect. Like other herpes virus, KSHV becomes latent in infected cells which make it difficult to completely eradicate. All current drugs are ineffective against latent infection; however this study showed that latent infection of KSHV can be terminated by glycyrrhizic acid. In B lymphocytes, glycyrrhizic acid down-regulates the expression of latency associated nuclear antigen (LANA) which allows the natural cell death (apoptosis) of the KSHV virus to occur.⁴

LICORICE AS A TREATMENT FOR CANKER SORES

The medicinal capabilities of licorice root (Glycyrrhiza) extract (GX) have been established by long term clinical use and, most recently, by scientific research. GX has been identified to have anti-inflammatory, anti-viral and soothing and coating abilities. The effectiveness of GX as a treatment for stomach ulcers was firmly established by scientific studies in the 1960's and 1970's after it had been used as a treatment for over 2000 years. Similarly, the information on the effectiveness of GX for canker sores dates back to ancient times, but only recently has there been research to show its effectiveness in treating canker sores. In a study where GX was administered to subjects in the form of a mouth wash, 15 of 20 patients had 50-75% pain relief within 24 hours and by day 3 there was complete healing of ulcers.⁵

Even though the results indicated it to be effective in healing canker sores, the mouth wash format was not feasible for general usage. For a sufficient amount of GX to reach and heal the ulcer, the total quantity needed in the mouth wash produced an unpalatably strong taste. In order for licorice root to be an acceptable treatment for canker sores, a method was needed to slowly deliver a small, but therapeutic amount of GX just to the sore, with a mild pleasant taste.

A May 2005 study reported on the use of a specially designed oral disc that self adheres on or near the sore. As it dissolves over 2-6 hours, the disc releases a small, but therapeutic, amount of GX that is both palatable and

healing. Individuals who used the product as directed reported healing of their canker sores in 3 days or less for 26 out of 27 canker sores evaluated.¹¹ The second factor examined in this study was the ability of the disc to provide pain relief. The results showed that the medicated GX discs generally relieved pain within 5 minutes of being applied.

The general conclusion of this study was that licorice root (Glycyrrhiza) extract (GX) delivered in a small, oral patch serves to both relieve pain and accelerate healing of canker sores. The authors of the article reported that the tested product is now available as an over-the-counter treatment for canker sores.

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