

Licorice & Rehmannia: Adrenal Tonic

Licorice

Glycyrrhiza glabra root is well known for a wide range of therapeutic activities and indications in several traditional medicine systems.¹ It contains triterpenoid saponins, especially glycyrrhizin (GL), as well as flavonoids.²

In the *British Herbal Pharmacopoeia* 1983 and the *British Herbal Compendium*, Licorice is described as an adrenal agent and adrenocorticotropic (which herbalists now regard as adrenal tonic) and indicated for primary adrenocortical insufficiency and autoimmune Addison's disease.^{2,3} (Addison's disease is an adrenal disease characterised by the progressive destruction of the adrenal cortex, resulting in insufficient production of aldosterone and hydrocortisone.)

Injection of GL in rats reduced the suppressive effect of cortisol on adrenocorticotrophic hormone (ACTH) synthesis, ACTH secretion and adrenal weight. In a clinical study, oral administration of GL (150–300 mg/day) blocked the effect of the glucocorticoid dexamethasone in lowering the amount of urinary metabolites of cortisol as the result of pituitary (ACTH) inhibition.⁴

In the 1950s Licorice extract was found to be a successful medical treatment for some cases of Addison's disease. Patients could be maintained on 3–60 g/day of extract, the lower dosage was used when the disease was controlled.⁵ In one case treated with an initial high dose of Licorice extract, the dosage was dropped to a low maintenance dose. The doctor noted an increased sensitivity and cumulative action from Licorice.⁶ This suggests that Licorice may assist in the recuperation of the adrenal cortex.⁷

Licorice and cortisone was found to have a synergistic effect in several Addison's disease patients who had severely impaired adrenal cortex function. (Licorice had no effect on its own in these patients.)⁸ Licorice may aid the withdrawal of corticosteroid drugs and extend the pharmacological effects of steroid drugs.⁹

The adrenal cortex participates in the stress response through its production of glucocorticoids. Licorice may therefore support the adrenal cortex during prolonged

stress and be a valuable support of recuperation after a particularly exhausting phase or disease.⁷

Glycyrrhizin (GL), the main active saponin constituent of Licorice, is converted into glycyrrhetic acid (GA) in the intestine and absorbed. GA inhibits the activity of the enzyme 11 β -hydroxysteroid dehydrogenase type 2 in the kidney, which allows cortisol to bind to the mineralocorticoid receptors. In high doses and over a long period this may result in a hypermineralocorticoid state (and the side effects of hypertension and hypokalaemia).¹⁰

In traditional Chinese medicine (TCM) Licorice is regarded as a herb that tonifies the *qi*.¹¹ (In TCM *G. uralensis*, *G. glabra* and *G. inflata* are medicinally-interchangeable species.¹²) It may be prescribed for *Spleen qi* deficiency (e.g. weakness, appetite and weight loss), *pancreas* and *adrenal yin* deficiency (e.g. fatigue from overwork, stress or illness; as well as adrenal insufficiency and Addison's disease).¹³ Licorice also moderates and harmonises the characteristics of other herbs. Because it is said to enter all twelve primary channels, it can lead and conduct other herbs into the channels.¹¹

Rehmannia

Rehmannia glutinosa unprocessed root is used in traditional Chinese medicine (TCM) to reduce heat in the blood, to nourish *yin* and promote the production of body fluid. Indications for this type of Rehmannia include febrile diseases, skin eruptions, nosebleed,¹² and to prolong life.¹⁴ In Vietnam, Rehmannia is used for general debility.¹⁵

In western herbal medicine, Rehmannia is regarded as an adrenal tonic, due mainly to the activity demonstrated in experimental studies.

Oral administration of uncured Rehmannia (3 g/kg) for 2 weeks to rabbits chronically treated with the glucocorticoid dexamethasone significantly raised serum corticosterone levels. (This is a model of adrenal depletion.) Continuation of treatment resulted in further increases. Rehmannia treatment also prevented or reversed morphological changes in the pituitary and adrenal cortex, appearing to antagonize the suppressive effect of glucocorticoids on the hypothalamic-pituitary-adrenal axis.¹⁶ Rehmannia may

work by inhibiting the negative feedback from the glucocorticoid to the pituitary gland.¹⁷ These results also suggest that Rehmannia supports the cells of the adrenal cortex and pituitary during times of prolonged stress.

Rehmannia may be beneficial for the treatment of conditions that involve the immune system. Oral administration (10-500 mg/kg) of several fractions from the ethanol extract of Rehmannia had an immune modulating effect in an experimental model.¹⁸ Therapeutic effects have been demonstrated for patients with rheumatoid arthritis.¹⁹ Rehmannia may thus be helpful in autoimmune conditions of the adrenals.

Synergistic Formulation

These herbs would complement each other in a potent adrenal tonic formulation.

Indications

Adrenal depletion, to aid the recovery of the adrenal cortex.

To support adrenal cortex function in times of high stress.

Fatigue, anxiety, sleeplessness or reduced immune function during periods of prolonged stress.

Chronic illness.

Chronic autoimmune diseases.

Cautions and Contraindications

Contraindicated in hypertension and oedema, caution is advised in patients taking cortisol or prednisolone, and in the elderly and those with cardiac, renal or hepatic disease due to Licorice. Do not prescribe if patient is taking potassium-depleting diuretics.

Licorice needs to be prescribed cautiously – avoid excessive doses. Patients who are prescribed Licorice preparations high in glycyrrhizin for prolonged periods should be placed on a high potassium and low sodium diet. They should be closely monitored for blood pressure increases and weight gain.

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