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File: ■ Licorice (*Glycyrrhiza glabra*, Fabaceae)
■ Parkinson's Disease
■ Neurodegenerative Disease

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RE: Licorice Used as Adjunct Therapy Improves Symptoms of Parkinson's Disease

Patramfar P, Hajari F, Yousefi G, Azadi S, Hamedi A. Efficacy of oral administration of licorice as an adjunct therapy on improving the symptoms of patients with Parkinson's disease, a randomized double blinded clinical trial. *J Ethnopharmacol*. January 2020;247:112226. doi: 10.1016/j.jep.2019.112226.

Parkinson's disease (PD) is a progressive neurodegenerative disease characterized by behavioral and movement abnormalities. Among the factors involved in the etiology of PD are genetic susceptibility, environmental elements, and the aging process. The disease is treated pharmacologically by using levodopa, dopamine agonists, monoamine oxidase B (MAO-B) inhibitors, anticholinergics, amantadine, and/or catechol-O-methyl transferase (COMT) inhibitors. Those drugs are limited, however, in their ability to slow or stop the progression of the disease. Licorice (*Glycyrrhiza glabra*, Fabaceae) has a long history of use in Persian and Ayurvedic medicine as a treatment for respiratory, genitourinary, gastrointestinal, skin, and eye diseases. These authors, from Shiraz University of Medical Sciences in Shiraz, Iran, conducted a randomized, double-blind, placebo-controlled, clinical trial to investigate the effectiveness of licorice when used as adjunct treatment in the management of PD.

Dried extract of licorice root purchased in Shiraz was used to prepare the syrup administered in the clinical trial. The organoleptic and physiochemical properties of the licorice were modified by adding sugar, citric acid, and gelling agent. Each 5 cc of syrup contained 136 mg of licorice extract, with 12.14 mg of glycyrrhizic acid, 136 µg of polyphenols, and 2.6 µg of flavonoids. A placebo syrup was prepared by using a similar method but without any licorice extract.

Patients attending Imam Reza Clinique at Shiraz University of Medical Sciences from December 2016 to May 2018 were eligible for the study if they were aged 30-80 years, had idiopathic PD with symptoms beginning during the preceding six years, scored 3 or lower on the Hoehn and Yahr scale used to describe the progression of PD symptoms, and had not had any changes in treatment during the four weeks before the start of the study.

Thirty-nine patients were enrolled in the study and randomly assigned to the licorice and placebo groups. The 20 patients in the licorice group and 19 patients in the placebo group took 5 cc of the respective syrup twice daily for six months. All patients also followed standard treatment recommendations (the dopamine agonist pramipexol and/or levodopa-B) for PD. Ten patients in the placebo group and 11 patients in the licorice group were also taking amantadine as well as levodopa-B and/or pramipexol.

The primary outcome was change in total scores on the Unified Parkinson's Disease Rating Scale (UPDRS). Secondary outcomes were changes in scores of individual UPDRS domains which included a motor test, daily activities, intellectual activity, thought, and behavior, tremor and rigidity, modified Hoehn and Yahr scale, quality of life, and tolerability). All measures, including adverse effects, were assessed every six weeks throughout the duration of the study.

In the licorice group, one patient was lost to follow-up because of personal reasons; two patients discontinued the study because of urticaria and pruritus. One patient dropped out because of nausea, vomiting, and dizziness; and one patient was excluded because of change in treatment. In the placebo group, two patients were lost to follow-up because of personal reasons, and two patients were excluded because of treatment changes. The final analysis included 15 patients in each group. Duration of the disease was 3.21 ± 2.07 years in the treatment group and 3.1 ± 1.31 years in the placebo group.

The total UPDRS score improved in the licorice group and worsened in the placebo group from baseline to the end of the study ($P \leq 0.001$). Motor test scores were significantly lower in the licorice group compared with the placebo group during the third and fourth study visits ($P<0.05$). At the fourth visit, the scores for rigidity were significantly lower in the licorice group compared with the placebo group ($P<0.05$). The daily activity score was significantly lower in the licorice group when compared to the placebo group during the 2nd, 3rd, and 4th assessments ($P<0.01$). After two months of taking the licorice syrup, patients' tremor symptoms improved and motor and rigidity scores improved in the same group after four months. The licorice syrup had a greater effect on controlling the Yahr staging of the disease compared with the placebo syrup; however, the between-group difference was not significant.

No electrolyte abnormalities, significant changes in blood pressure or blood glucose levels, or adverse effects were observed during the study.

The authors acknowledge that more clinical trials with larger populations and longer durations would provide more insight on the benefits and possible adverse effects of using licorice to treat PD symptoms.

The authors conclude that the polyphenol-rich extract of licorice at the dose given during the trial improved the symptoms of PD without adverse effects.

—Shari Henson

The American Botanical Council has chosen not to reprint the original article.