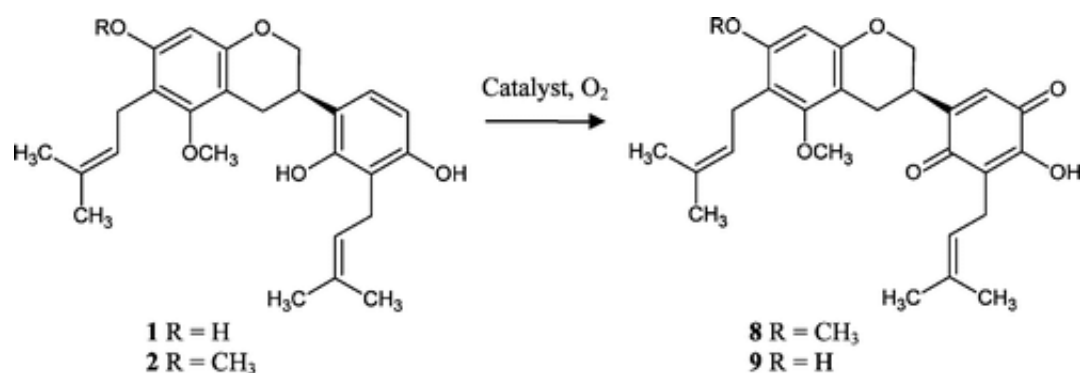


# Dried licorice root fights the bacteria that cause tooth decay and gum disease

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Scientists are reporting identification of two substances in licorice - used extensively in Chinese traditional medicine - that kill the major bacteria responsible for tooth decay and gum disease, the leading causes of tooth loss in children and adults. In a study in *ACS' Journal of Natural Products*, they say that these substances could have a role in treating and preventing tooth decay and gum disease.

Stefan Gafner and colleagues explain that the dried root of the [licorice](#) plant is a common treatment in Chinese traditional medicine, especially as a way to enhance the activity of other herbal ingredients or as a flavoring. Despite the popularity of licorice candy in the U.S., licorice root has been replaced in domestic candy with anise oil, which has a similar flavor. Traditional medical practitioners use dried licorice root to

treat various ailments, such as respiratory and digestive problems, but few modern scientific studies address whether licorice really works. (Consumers should check with their health care provider before taking licorice root because it can have undesirable effects and interactions with prescription drugs.) To test whether the sweet root could combat the [bacteria](#) that cause [gum disease](#) and cavities, the researchers took a closer look at various substances in licorice.

They found that two of the licorice compounds, licoricidin and licorisoflavan A, were the most effective antibacterial substances. These substances killed two of the major bacteria responsible for dental cavities and two of the bacteria that promote gum disease. One of the compounds - licoricidin - also killed a third gum disease bacterium. The researchers say that these substances could treat or even prevent oral infections.

**More information:** Isoflavonoids and Coumarins from *Glycyrrhiza uralensis*: Antibacterial Activity against Oral Pathogens and Conversion of Isoflavans into Isoflavan-Quinones during Purification, *J. Nat. Prod.*, 2011, 74 (12), pp 2514 - 2519. [DOI: 10.1021/np2004775](https://doi.org/10.1021/np2004775)

### **Abstract**

Phytochemical investigation of a supercritical fluid extract of *Glycyrrhiza uralensis* has led to the isolation of 20 known isoflavonoids and coumarins, and glycyrcarpan (7), a new pterocarpan. The presence of two isoflavan-quinones, licoriquinone A (8) and licoriquinone B (9), in a fraction subjected to gel filtration on Sephadex LH-20 is due to suspected metal-catalyzed oxidative degradation of licoricidin (1) and licorisoflavan A (2). The major compounds in the extract, as well as 8, were evaluated for their ability to inhibit the growth of several major oral pathogens. Compounds 1 and 2 showed the most potent antibacterial activities, causing a marked growth inhibition of the cariogenic species *Streptococcus mutans* and *Streptococcus sobrinus* at 10 µg/mL and the

periodontopathogenic species *Porphyromonas gingivalis* (at 5 µg/mL) and *Prevotella intermedia* (at 5 µg/mL for 1 and 2.5 µg/mL for 2). Only 1 moderately inhibited growth of *Fusobacterium nucleatum* at the highest concentration tested (10 µg/mL).

Provided by American Chemical Society

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