

# Characteristic Chemical Components of Prepared Glycyrrhiza

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## Summary

Prepared Glycyrrhiza in the Japanese Pharmacopoeia (JP) is made from Glycyrrhiza in JP by roasting. We found three characteristic thin-layer chromatography (TLC) spots in Prepared Glycyrrhiza that are absent in Glycyrrhiza. These spots were isolated and identified as phloretic acid (1), 2,6-anhydrofructofuranose (2) and 4-methylpyrrole-3-carboxamide (3) by spectral and chemical methods. The precursors of these compounds in Glycyrrhiza were investigated. TLC comparison of various Prepared Glycyrrhiza samples showed a spot whose content was inversely related to that of 1. This spot was isolated from Glycyrrhiza and identified as 4-hydroxybenzylmalonic acid (4). Pyrolysis of this compound gave 1, indicating that 4 is the precursor of 1 in Prepared Glycyrrhiza. 2,6-Anhydrofructofuranose (2) was formed from fructose or sucrose by heating. 4-Methylpyrrole-3-carboxamide (3) was formed on heating of fructose and asparagine via Maillard reaction. Thus, compounds 1-3 are formed from constituents of Glycyrrhiza during the roasting process to make Prepared Glycyrrhiza. Compounds 2 and 3 are derived from sugar and amino acid, which are contained in many plants, whereas compound 4 has been reported only in *Glycyrrhiza* species. Therefore, we consider phloretic acid (1) is a suitable marker compound to distinguish Prepared Glycyrrhiza from Glycyrrhiza by TLC analysis.

## Key words

Prepared Glycyrrhiza, Leguminosae, Phloretic acid, 4-Hydroxybenzylmalonic acid, 4-Methylpyrrole-3-carboxamide, 2,6-Anhydrofructofuranose