Inhibition of CYP2B6, CYP2C8, CYP2C9, and CYP3A4 by Sophorea Radix extracts in human liver microsomes

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BACKGROUND: Sophorae radix has been widely used for the treatment of diarrhea, inflammation, abscess, dysentery, and fevers in Oriental countries. The major ingredients are known as prenylated flavonoids and may cause herb-drug interactions in human. In this study, the inhibition of CYP isoform activities by Sophorae radix extracts were evaluated in human liver microsomes.

METHODS: Inhibition of the activities was evaluated by using CYP isoform selective probe substrates. Inhibition mechanism was determined by analysis of the inhibition after preincubation with inhibitors.

RESULTS: The extracts inhibited CYP2C8, CYP2C9, CYP2C19, and CYP3A4 with IC₅₀ values of 1.42, 13.6, 19.1, and 50 µg/ml, respectively. Preincubation of human liver microsomes with the extracts in the presence of NADPH additionally inhibited CYP2B6 and CYP3A4 activities, indicating that the extracts may inhibit CYP2B6 and CYP3A4 by mechanism-based inactivation. Prenylated flavonoids played the role in the inhibition of CYP activities.

CONCLUSION: The extracts of Sophorae radix was identified as an inhibitor for various CYP isoform activities and potential interaction with co-administered drugs should be carefully evaluated.