[*Allergol. Immunol.*, **7**, 256-260 (2000)] [Lab. of Pharmacology]

Inhibition of Scratching Behavior in Mice and Guinea Pigs by Ketotifen.

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Effects of ketotifen on scratching behaviors in mice and guinea pigs caused by immediate hypersensitivity reactions were investigated. Ketotifen given intraperitoneally inhibited the scratching behavior associated with passive cutaneous anaphylaxis in ICR mice significantly. Experimental allergic conjunctivitis was induced in actively sensitized guinea pigs. The scratching behavior to the eye of guinea pigs was significantly inhibited by ketotifen ophthalmic solution, although solutions of disodium cromoglycate and tranilast failed to affect it. These results support the anti-pruritic efficacy of ketotifen in humans, which is mainly due to its histamines H_1 receptor antagonistic property.

[*Phytochemistry*, **53**, 7-12 (2000)] [Lab. of Pharmacognosy]

Secologanin Synthase Which Catalyzes the Oxidative Cleavage of Loganin into Secologanin Is a Cytochrome P450.

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Secologanin synthase, an enzyme catalyzing the oxidative cleavage of the cyclopentane ring in loganin to form secologanin, was detected in microsomal preparations from cell suspension cultures of *Lonicera japonica*. The reaction required NADPH and molecular oxygen, and was blocked by carbon monoxide as well as by several other cytochrome P450 inhibitors, indicating that the reaction was mediated by cytochrome P450. Of the subtrates examined, only specificity for loganin was demonstrated. A possible reaction mechanism is described.

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Five Phenolic Glycosides from *Alangium chinense*.

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From the dried leaves of *Alangium chinense*, five novel phenolic glycosides, 6'-*O*-galloylsalicin (1); 4',6'-di-*O*-galloylsalicin (2); 4',6'-*O*-*(S)*-hexahydroxydiphenoyl-salicin (3); 4',6'-*O*-*(R)*-hexahydroxydiphenoylsalicin (4); and pyrocatechol 1-*O*- β -xylopyranosyl(1→6)- β -D-glucopyranoside (5) were isolated. The structures of these new compounds were determined by spectroscopic methods.

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Geranylhydroquinone 3"-hydroxylase, a Cytochrome P-450 Monoxygenase from *Lithospermum erythrorhizon* Cell Suspension Cultures.

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Geranylhydroquinone 3"-hydroxylase, which is likely to be involved in shikonin and dihydroechinofuran biosynthesis, was identified in cell suspension cultures of *Lithospermum erythrorhizon* Sieb. et Zucc. (Boranginaceae). The enzyme hydroxylates the isoprenoid side chain of geranylhydroquinone (GHQ), a known precursor of shikonin. Proton/proton correlation spectroscopic and proton/proton long range correlation spectroscopic studies confirmed that hydroxylation takes place specifically at position 3", i.e. at the methyl group involved in the cyclization reaction. The enzyme is membrane-bound and was found in the microsomal fraction. It requires NADPH and molecular oxygen as cofactors, and is inhibited by cytochrome P-450 inhibitors such as cytochrome c and CO. The inhibitory effect of CO is reversed by illumination. These data suggest that the enzyme is a cytochrome P-450-dependent monooxygenase. The optimum pH of GHQ 3"-hydroxylase is 7.4, and the apparent Km value for GHQ is 1.5 μM. The reaction velocity obtained with 3-geranyl-4-hydrobenboic acid was more than 100 times lower than that obtained with geranylhydroquinone.