Search for Inhibitors of Cytchronxe P450 3A4 froiyi foods

2003 Fiscal Year Final Research Report Summary

Sear~h for Inhibitors of Cytchronxe P450 3A4 froiyi foods

Research Project

Project/Area Number

14571999

Research Category

Grant-in-Aid for Scientific Research (C)

Allocation Type

Single-year Grants

Section

一般

Research Field

Chemical pharmacy

Research Institution

Kanazawa University

Principal Investigator

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Project Period (FY)

2002 – 2003

Keywords

cytochrome P450 / drug metabolism / food / grapefruit juice / white pepper / strawberry

Research Abstract

Cytochrome P450(CYP)enzymes are home-containing monooxygenases and constitute three families, CYP1, CYP2, and CYP3.These enzymes have been mainly expressed in liver microsomes, and are recognized to be responsible for drug metabolism, carcinogenesis, and degradation of xenobiotics. CYPs are also responsible for the biosynthesis of lipids, steroids, and other secondary metabolites.CYP3A4 is the most abundant enzyme in human liver microsomes ; approximately 30% of the total CYP was suggested to be CYP3A4.Recent investigations have shown that more than 50% of clinically used drugs are oxidized by CYP3A4.It is reported that concomitant oral administration of several foods and herbs affect drug metabolism in humans by inhibiting CYP3A4 activity and that grapefruit juice alters the pharmacokinetics of various drugs, including cyclosporine, midazolam, dihydropyridine-type calcium channel blockers, and triazolam.In the course of our study of.CYP inhibitors, we have reported the isolation and structure elucidation of furanocoumarins, paradisins

A, B, and C, from grapefruit juice, bisalkaloids, dipiperamides A-E, from the white pepper Piper nigrum, and three glycosides from the strawberry Fragaria ananassa Duch.cv.Tochiotome.

Research Products (10 results)

All | Other

All | Publications (10 results)

[Publications] Sachiko Tsukamoto: "Dipiperamides A, B, and C : bisalkaloids from the white pepper Piper nigrum inhibiting CYP3A4 activity"Tetrahedron. 58. 1667-1671 (2002)

[Publications] Sachiko Tsukamoto: "CYP3A4 Inhibitory Activity of New Bisalkaloids Dipiperamides D and E and Cognate Alkaloids from the White Pepper"Bioorg.Med.Chem.. 10. 2981-2985 (2002)

[Publications] Tomihisa Ohta: "Paradisin C : a new CYP3A4 inhibitor from grapefruit juice"Tetrahedron. 58. 6631-6635 (2002)

[Publications] Tomihisa Ohta: "Localization and contents of paradisins, the most potent CYP3A4 inhibitors, in a grapefruit Citrus paradisii and grapefruit juice"Nat.Med.. 56. 264-267 (2002)

[Publications] Tomihisa Ohta: "Dihydroxybergamottin Caproate as a Potent and Stable CYP3A4 Inhibitor."Bioorg.Med.Chem.. 10. 969-973 (2002)

[Publications] Sachiko Tsukamoto: "Dipiperamides A, B, and C : bisalkaloids from the white pepper Piper nigrum inhibiting CYP3A4 activity"Tetrahedron. 58. 1667-1671 (2002)

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