Potent inhibition by star fruit of human cytochrome P450 3A (CYP3A) activity.


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There has been very limited information on the capacities of tropical fruits to inhibit human cytochrome P450 3A (CYP3A) activity. Thus, the inhibitory effects of tropical fruits on midazolam 1'-hydroxylase activity of CYP3A in human liver microsomes were evaluated. Eight tropical fruits such as common papaw, dragon fruit, kiwi fruit, mango, passion fruit, pomegranate, rambutan, and star fruit were tested. We also examined the inhibition of CYP3A activity by grapefruit (white) and Valencia orange as controls. The juice of star fruit showed the most potent inhibition of CYP3A. The addition of a star fruit juice (5.0%, v/v) resulted in the almost complete inhibition of midazolam 1'-hydroxylase activity (residual activity of 0.1%). In the case of grape-fruit, the residual activity was 14.7%. The inhibition depended on the amount of fruit juice added to the incubation mixture (0.2-6.0%, v/v). The elongation of the preincubation period of a juice from star fruit (1.25 or 2.5%, v/v) with the microsomal fraction did not alter the CYP3A inhibition, suggesting that the star fruit did not contain a mechanism-based inhibitor. Thus, we discovered filtered extracts of star fruit juice to be inhibitors of human CYP3A activity in vitro.

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