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The Effects of Dietary Flavonoids on the the Benzo(k)fluoranthene-Induced CYP1A1 Gene Expression by CALUX Bioassay

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We investigated the effect of dietary flavonoids, such as genistein, daidzein, chrysin, naringenin and morin on CYP1A1 promoter activity, 7-ethoxyresorufin-O-deethylase (EROD) activity and CYP1A1 mRNA expression induced by benzo(k)fluoranthene(B(k)F) in MCF-7 cells. When cells were treated with genistein, daidzein, chrysin, naringenin and morin alone, it was not changed that EROD and CYP1A1 mRNA, compared to that of control. However, flavonoids inhibited the B(k)F-induced CYP1A1 promoter activity and mRNA level at high concentration. But some flavonoids exhibited stimulatory effects B(k)F-induced CYP1A1 promoter activity and mRNA level at low concentration. And some flavonoids significantly inhibited B(k)F-induced EROD activity at high concentration. Overall, results from these studies demonstrate flavonoids might interfere the action of B(k)F with AhR system to stimulate CYP1A1 gene expression.

Keyword: flavonoid, B(k)F,