

Antioxidant Capacity and Cytochrome P450 3A Inhibitory Effect of Major Components in Mate Tea Extract

Yun-Ta Liu, Chong-Kuei Lii, Hsien-Tsung Yao*

Department of Nutrition, China Medical University, Taichung, Taiwan

Correlation of major components in 7 commercial mate tea extract with their free radical scavenging activities were investigated. The scavenging abilities against 1,1-diphenyl-2-picrylhydrazyl (DPPH) and 2,2'-azino-bis (3-ethylbenzthiazoline-6-sulphonic acid) (ABTS) radicals were used to determine the antioxidant potential of mate tea extract. Total phenolics, neo-chlorogenic acid (5-CQA), 3,5-dicaffeoylquinic acid (3,5-diCQA) in mate tea extract were significantly ($r > 0.7$) correlated to the scavenging abilities against DPPH and ABTS radicals. The CYP3A inhibitory effect of mate tea extract and its major components was also studied. Testosterone 6 β -hydroxylase (CYP3A) was used as a probe. Results show that mate tea extract had CYP3A inhibitory effect ($IC_{50} = 132 \mu\text{g/mL}$) in rat and human liver microsomes, and acts as a competitive inhibitor. According to the inhibitory effect of major compounds in mate tea extract, ursolic acid ($IC_{50} = 38.6 \mu\text{g/mL}$) had higher potential for inhibiting CYP3A activity than others ($IC_{50} > 50 \mu\text{g/mL}$). In conclusion, antioxidant capacity of mate tea extract was correlated to the content of total phenolics, 5-CQA and 3,5-diCQA, and the CYP3A inhibitory effect was primarily attributed to the ursolic acid.

Keywords: Mate tea extract, Free radical scavenging, Total phenolics, CYP3A, Inhibitory effect