

Title            Inhibitory effects of cinnamic acid and its derivatives on the diphenolase activity of mushroom  
                  (*Agaricus bisporus*) tyrosinase

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### Abstract

The effects of cinnamic acid and its derivatives (2-hydroxycinnamic acid, 4-hydroxycinnamic acid and 4-methoxycinnamic acid) on the activity of mushroom tyrosinase have been studied. Results showed that cinnamic acid, 4-hydroxycinnamic acid and 4-methoxycinnamic acid strongly inhibited the diphenolase activity of mushroom tyrosinase and the inhibition was reversible. The  $IC_{50}$  values were estimated to be 2.10, 0.50 and 0.42 mM, respectively. 2-Hydroxycinnamic acid had no inhibitory effect on the diphenolase activity of the enzyme. Kinetic analyses showed that the inhibition type of cinnamic acid and 4-methoxycinnamic acid was noncompetitive with the constants ( $K_I$ ) determined to be 1.994 and 0.458 mM, respectively. The inhibition type of 4-hydroxycinnamic acid was competitive, with the inhibition constant ( $K_I$ ) was 0.244 mM.

**Abbreviations:** DMSO, dimethyl sulfoxide; L-DOPA, L-3,4-dihydroxyphenylalanine;  $IC_{50}$ , the inhibitor concentrations leading to 50% activity lost