Effects of methylated catechins on 3-methylcholanthrene-mediated induction of CYP1A1 enzyme

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Toshiyuki Wakimoto[3], Toshiyuki Kan[1,3] and Kiyomitsu Nemoto[2]
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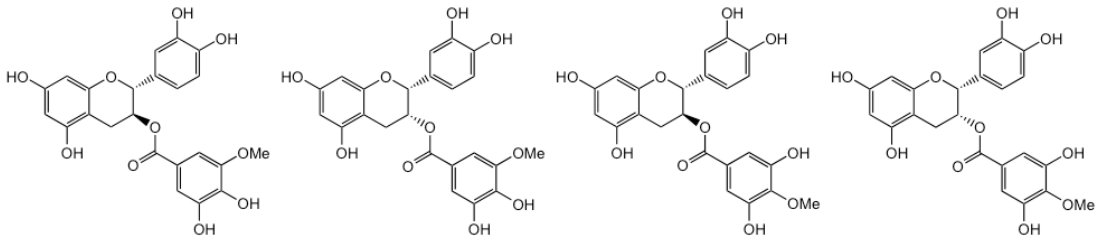
In the present study, we examined the effects of 3"- or 4"-*O*-methylated catechins, such as 3"-Me-CG, 4"-Me-CG, 3"-Me-ECG, 4"-Me-ECG, 3"-Me-GCG, 4"-Me-GCG, 3"-Me-EGCG and 4"-Me-EGCG, on the 3-methylcholanthrene (MC)-mediated induction of CYP1A1 enzyme at levels of mRNA, protein, and activity (ethoxyresorufin *O*-deethylation activity) in HepG2-A10 cells. The *O*-methylated CG and ECG derivatives, but not the *O*-methylated GCG and EGCG derivatives, augmented the MC-mediated induction of CYP1A1 at levels of mRNA and protein. On the other hand, *O*-methylated ECG derivatives, but not other compounds including *O*-methylated CG, showed capacities for enhancing MC-mediated induction of CYP1A1 at the level of enzyme activity. The present findings demonstrate that the *O*-methylated GC and ECG derivatives show capacities for enhancing MC-mediated induction of CYP1A1 and further suggest that the *O*-methylated GCs, but not the *O*-methylated ECGs, show capacities for inhibiting the enzyme activity of CYP1A1.



3"-Me-CG
CYP1A1 expression: +++
CYP1A1 activity: ±

3"-Me-ECG
CYP1A1 expression: +
CYP1A1 activity: ++

4"-Me-CG
CYP1A1 expression: ++
CYP1A1 activity: ±

4"-Me-ECG
CYP1A1 expression: +
CYP1A1 activity: ++