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Up-Regulation of Murine Cyp1a1 in Mouse Hepatoma Hepa-1c1c7 Cells by Rutaecarpine

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Rutaecarpine is a major quinazolinocarboline alkaloidal component of Evodia rutaecarpa Bentham (Rutaceae). In the present study, we investigated the effect of rutaecarpine on CYP1A1 gene expression in mouse hepatoma Hepa-1c1c7 cells. Cultured mouse hepatoma Hepa-1c1c7 cells were treated with rutaecarpine to assess the role of rutaecarpine on CYP1A1 expression. CYP1A1-specific 7-ethoxyresorufin O-deethylase (EROD) activity was significantly increases by rutaecarpine. Furthermore, rutaecarpine caused an increase in the level of CYP1A1 mRNA, indicating that it may be an agonist of the aryl hydrocarbon receptor (AhR). A transient transfection assay using dioxin-response element-linked luciferase and electrophoretic mobility shift assay revealed that rutaecarpine increased transcription of a reporter vector containing the CYP1A1 promoter. These results suggest that rutaecarpine might be act as an agonist of the AhR in Hepa-1c1c7 cells.

Keyword: Rutaecarpine, CYP1A1, aryl hydrocarbon receptor