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Rheum palmatum root extract inhibits hepatocellular carcinoma in rats treated with diethylnitrosamine

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Objectives: The aim of this study was to investigate the potential anticancer properties of a methanol extract of *Rheum palmatum* roots against Diethylnitrosamine (DENA)-induced Hepatocellular Carcinoma (HCC) in rats and to characterize its phytoconstituents.

Methods: HPLC-PDA-MS/MS was used to profile the secondary metabolites in R. palmatum root extract. HCC was induced using diethylnitrosamine. The activity of serum Alanine Aminotransferase (ALT), Aspartate Aminotransferase (AST), Alkaline Phosphatase (ALP) and Gamma-Glutamyl Transferase (GGT), Alpha-Fetoprotein (AFP), total proteins, serum albumin and serum globulin was determined. DNA fragmentation and histopathological examination and GST-P immune-staining were also studied.

Findings: LC-MS/MS analysis identified 16 compounds belonging to anthraquinones, flavonoids and tannins. The root extract significantly reduced the elevated liver enzymes ALT and AST and increased total proteins, albumin and globulin in HCC-rats. Also, the tumor markers AFP and GGT levels were significantly reduced in HCC-rats treated with the extract. In addition, the extract significantly reduced elevated DNA fragmentation and decreased the numbers and areas of GST-P positive putative foci in HCC-rats.

Conclusion: Rheum palmatum is a potential candidate to be explored for the treatment of hepatocellular carcinoma.

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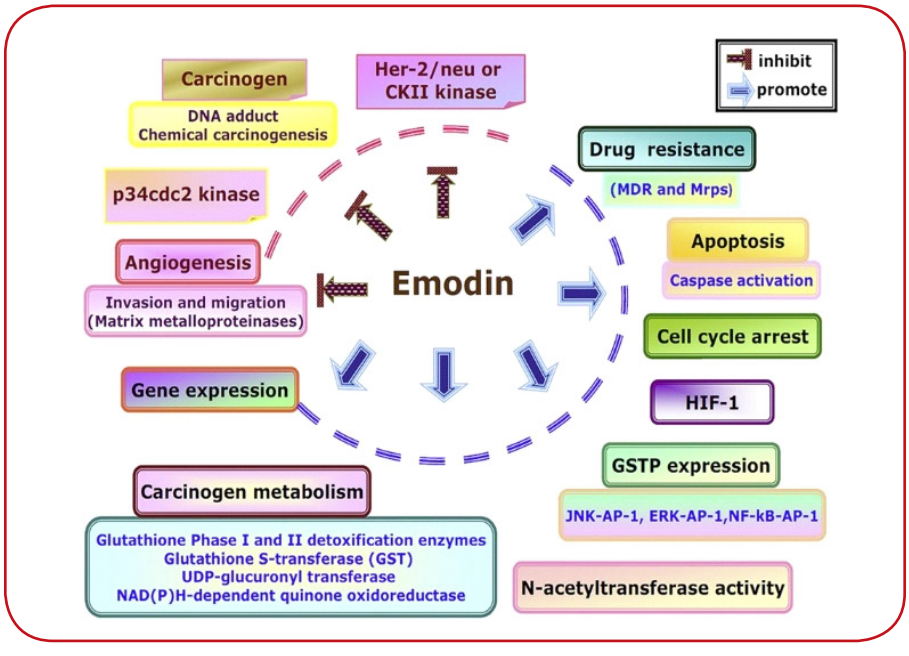

Figure-1: The pharmacology of emodin as a possible anti-cancer therapy.