AMELORATION OF NON-ALCOHOLIC FATTY LIVER DISEASE (NAFLD)/NON-ALCOHOLIC STEATOHEPATITIS (NASH) BY CHICORY SEED EXTRACT VIA MODULATION OF PPARα AND SREBP-1

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Chicory (*Cichorium intybus* L.*)* is known for having antidiabetic and lipid lowering effects [1]. We evaluated the effect of chicory seed extract (CI) on hepatic steatosis induced by BSA-oleic acid complex (OA) in HepG2 cells (*in vitro*) [2] and by early and late stage diabetes in rats (*in vivo*). Different dosages of CI (1.25, 2.5 and 5 mg/ml) were applied along with OA (1mM) to HepG2 cells, simultaneously and non-simultaneously, and without OA to ordinary non-steatotic cells. Cellular lipid accumulation and glycerol release were measured, and the expression levels of sterol regulatory element-binding protein-1c (SREBP-1c) and peroxisome proliferator-activated receptor alpha (PPARα) were determined. Liver samples, from our previous study [3], were stained with Hematoxylin and Eosin (H&E). Significant histological damage (steatosis-inflammation-fibrosis) to cells and tissues and down-regulation of SREBP-1c and PPARα genes that accrued from steatosis induction were prevented by CI in simultaneous treatment. In non-simultaneous treatment, CI up-regulated the expression of both genes to restored normal levels of the corresponding protein. However, CI seemed to act as a PPARα agonist as its stimulating effect on PPARα was more noticeable [4, 5]. CI released glycerol from HepG2 cells, and seemed to target the first and second hit phases of hepatic steatosis. A preliminary attempt to characterize CI showed caffeic acid, chlorogenic acid, and chicoric acid, among the constituents [6].

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