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Chenodeoxycholic acid, an endogenous FXR ligand alters adipokines and reverses insulin resistance

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Adipose tissue secretes adipokines that regulate insulin sensitivity in adipocytes and other peripheral tissues critical to glucose metabolism. Insulin resistance is associated with severe alterations in adipokines characterized by release of increased pro-inflammatory cytokines and decreased anti-inflammatory cytokines from adipose tissue. The role of Farnesoid X receptor (FXR) activation on adipokines in relation to adipose tissue inflammation and insulin resistance is not completely explored. For the first time, we have evaluated the ability of Chenodeoxycholic acid (CDCA), an endogenous FXR ligand, in restoring the disturbance in adipokine secretion and insulin resistance in palmitate treated 3T3-L1 cells and adipose tissues of high fat diet (HFD) rats. CDCA suppressed several of the tested pro-inflammatory adipokines (TNF-α, MCP-1, IL-6, Chemerin, PAI, RBP4, resistin, vaspin), and enhanced the major anti-inflammatory and insulin sensitizing adipokines (adiponectin, leptin). CDCA suppressed the activation of critical inflammatory regulators such as NF-κB and IKKβ which are activated by palmitate treatment in differentiated cells and HFD in rats. We show the altered adipokines in insulin resistance, its association with inflammatory regulators, and the role of CDCA in amelioration of insulin resistance by modulation of adipokines.

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Effect of adding chaya leaf extract on crude groundnut oil stability

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The effectiveness of adding methanol and water extracts of chaya leaf to stabilize crude groundnut oil (CGNO) hydrolytically and oxidatively was investigated for twelve months at room temperature (27-33 ^{0}C). Extracts of chaya leaf were prepared by separately dissolving dried, ground and sieved chaya leaf into methanol and water in ratio 1:10 for 72 hours. The methanol chaya leaf extract (MCLE) and water chaya leaf extract (WCLE) were separately added at varying concentrations (200 ppm to 1000 ppm) to CGNO. Another set of CGNO which contained no additive (0 ppm (control)) and 200 ppm BHT was set-up. The colour, refractive indices, free fatty acid (FFA), acid value (AV) and peroxide value (PV) of CGNO samples were monitored monthly using standard methods for a period of twelve months. The colour and refractive index of CGNO containing MCLE ranged between 30.5-33.5 units and 1.464-1.467 respectively while the colour and refractive index of CGNO containing WCLE ranged between 30.0-30.5 units and 1.465- 1.469 accordingly. And the colour and refractive index of CGNO which contained 200 ppm BHT and no additive were 30.0 units and 1.463 respectively. There was slight difference in refractive index of CGNO containing plant additives (1.464-1.469) and CGNO which contained no additive (1.463). There was no significant difference at $P<0.05$ in FFA, AV and PV of CGNO containing MCLE and WCLE with CGNO containing no additive. The MCLE and WCLE at all concentrations considered are more effective in stabilizing CGNO against oxidative rancidity than 200 ppm BHT. 200 ppm BHT is only superior to 200 ppm WCLE among the chaya leaf extracts in stabilizing CGNO against hydrolytic rancidity.

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