

Effect of Green tea and EGCG on Liver: *In vivo* and *In vitro* study

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Epigallocatechin 3-gallate (EGCG), the principal component of green tea (GT), is well known for its beneficial effects. However, high doses of EGCG may cause liver toxicity. We studied the effect of GT and EGCG *in vivo* and *in vitro*. In the *in vivo* study, we examined the potential hepatotoxicity of high doses of EGCG under febrile conditions induced by lipopolysaccharide (LPS). EGCG was given intra gastric (IG) or intraperitoneal (IP), while LPS was given IP to mice (ND4). Plasma ALT levels were determined and liver histopathology was performed. Results suggested that administration of high doses of EGCG can lead to mild liver toxicity. However, under febrile conditions (induced by LPS), this liver toxicity could become severe. In the *in vitro* study, HepG2 cells were treated with different concentrations of GT and EGCG with and without pre-sensitization with LPS. At lower concentrations of GT or EGCG, cell viability was increased regardless of pre-sensitization with LPS. However, at higher concentrations, both GT and EGCG decreased cell viability, especially, in cells that were presensitized with LPS. Furthermore, TGF β 1 and RXR α were also over-expressed in HepG2 cells that were pre-sensitized with LPS and treated with high concentration of EGCG. These *in vitro* results lend support to the *in vivo* results indicating that EGCG probably acts as an anti-oxidant at lower doses but at higher doses it may cause liver toxicity possibly due to its pro-oxidant activity.

Biography

Ibrahim Saleh has gained his bachelor degrees of Pharmacy from Al-Azhar University, Cairo, Egypt. He gained the master degree in Pharmacology and Toxicology from the same place, where he is working as a senior teaching and research assistant. He is currently a Ph.D. student working on the possible hepatotoxic potential of natural products, at the National center for natural products research, School of Pharmacy, University of Mississippi, USA.

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