

Aqueous garlic extract mitigate hypercholesterolemia and hyperglycemia; Safety health concerns

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Functional foods are gaining popularity worldwide owing to the consumer's preference towards the consumption of natural and safe products in dietary modifications. Garlic (*Allium sativum*), is one of the most essential vegetables provides health promoting perspectives due to array of bioactive ingredients. These bioactive moieties especially sulfur containing compounds are responsible for curing various lifestyle related disorders like diabetes, hyperlipidemia and cancer insurgence. Considering the aim, garlic extraction was carried out using various solvents (aqueous ethanol, aqueous methanol and water) at different intervals (4, 5 and 6 hours) for best solvent extraction efficiency. In vitro studies were carried out to evaluate the status of antioxidant potential in these extracts. For the purpose, DPPH assay, antioxidant activity, FRAP test and glucose diffusion were examined. Regarding the safety concerns of garlic, efficacy study was conducted using New Zealand type Rabbits by providing best aqueous garlic extract for a period of 28 days. Accordingly, four groups were designed using different doses of extract (control, 3, 6 and 9 mL/kg b.w). Functional garlic extract containing water soluble active components resulted in significant reduction in total cholesterol and LDL level indicating their effectiveness against hypercholesterolemic perspectives. Maximum reduction in total cholesterol and LDL was 8.9% and 4.5% respectively in G2 consumed garlic extract @ 6 mL/Kg b.w. Likewise, serum glucose was also substantially reduced however, effect was more pronounced in G2 as compare to other groups. Similarly, hematological analyses were also improved by phytotherapy of functional food diets. Furthermore, serum biochemistry, protein ratios, electrolytes and non-electrolytes were within normal range revealing safety health concerns. From the present investigation, it is deduced that garlic preparations like aqueous extract, garlic oil, garlic macerates are effective against hypercholesterolemia and hyperglycemia therefore, proposed to cure various life threatening disorders.

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