

## "Hepatoprotective Potential of Modified Mango Kernel Starch in Mice with Diet-Induced Hypercholesterolemia: A Promising Therapeutic Approach"

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**Background:** In recent years, the rising prevalence of hypercholesterolemia has prompted an increasing interest in developing natural alternatives to traditional fats that contribute to elevate cholesterol levels. Mango kernel, an underutilized by-product, offers a sustainable source of starch, which, when chemically modified, can exhibit fat-like properties while promoting better lipid metabolism.

**Objectives:** This research investigates the impact of chemically altered starch on mice with hypercholesterolemia.

**Methods:** Mango kernel starches were obtained from various species of *Mangifera indica*. The raw starches were then chemically modified using the acid hydrolysis method. To study hypocholesterolemic effect, hypercholesterolemia was induced in C57BL/6 mice with administration of 1.25% cholesterol and 0.5% cholic acid for 4 wk. After that, mice were randomly divided into four groups and fed a basic, high-cholesterol, high-cholesterol with modified starch (citric acid), or high-cholesterol with modified starch (hydrochloric acid) diet for 5 wk. Blood samples were collected to measure lipid concentration and cytokine assay.

**Results:** Acid hydrolysis treatment with citric and hydrochloric acid of mango kernel starch increased water-holding capacity and amylose content without affecting oil-binding capacities. FTIR spectra showed interactions between starch chains. SEM images displayed changes in surface micrographs. Modified starch improved cholesterol, triglycerides, and lipid peroxidation

in mice. It also reduced plasma TNF- $\alpha$  and IL-6 levels and expression of cholesterol-related proteins in the liver.

Conclusion: This study found that adding chemicals to native starch created a functional food product with hypolipidemic and liver function benefits.