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Assessing the Effect of Commercialised Formulations for Purification of Reused Edible Refined Cooking Oil: A Review

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ABSTRACT

Introduction: Oil is a major ingredient in Indian cooking, and reusing it is common in households and commercially. Reheating oil beyond its smoking point breaks down unsaturated fatty acids, forming free radicals and trans fats, leading to cardiovascular diseases, insulin resistance, diabetes, and a disrupted gut microbiome. Since oil is an expensive commodity, discarding it is not feasible, necessitating a formulation to reduce toxins and improve physical properties for reuse.

Aim: To find the current literature on effect of commercialised formulations for purification of reused edible refined cooking oil.

Materials and Methods: Papers were sourced from PubMed, Google Scholar, and ResearchGate. This review focused on papers examining the effect of formulations on at least two-time reheated edible oils, focusing on Free Fatty Acids (FFA) neutralisation with NaOH and KOH.

Result: The findings showed that sodium hydroxide (NaOH) and potassium hydroxide (KOH) effectively reduces FFAs in reused refined cooking oil through chemical neutralisation by forming soap and water, which is later removed. Liquid-liquid extractions were also used. Reducing FFAs is crucial to prevent trans-fat formation. However, industrial ingredients like magnesium silicate, used to absorb contaminants and acid clay montmorillonite used as a bleaching agent to decolourise reused oil, raise health concerns. Magnesium silicate interferes with drug absorption (e.g., miconazole and misoprostol), while montmorillonite clay causes dehydration, respiratory issues, and allergic reactions.

Conclusion: There is need of further research could focus on natural food grade formulation.

Keywords: Food safety, Oil purification, Reused cooking oil

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