Blending as a strategy to improve the properties of cottonseed oil

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ISO 9001:2015

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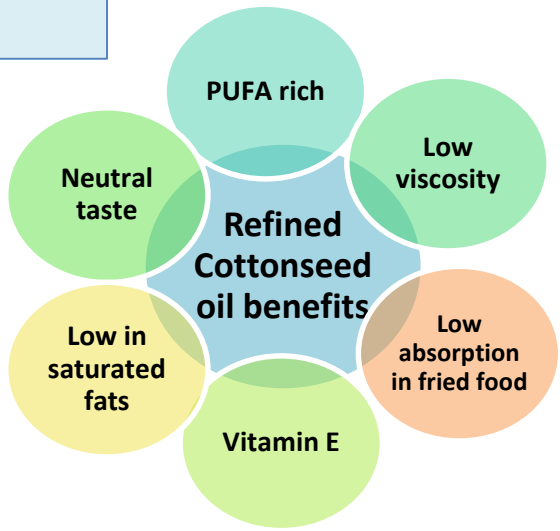
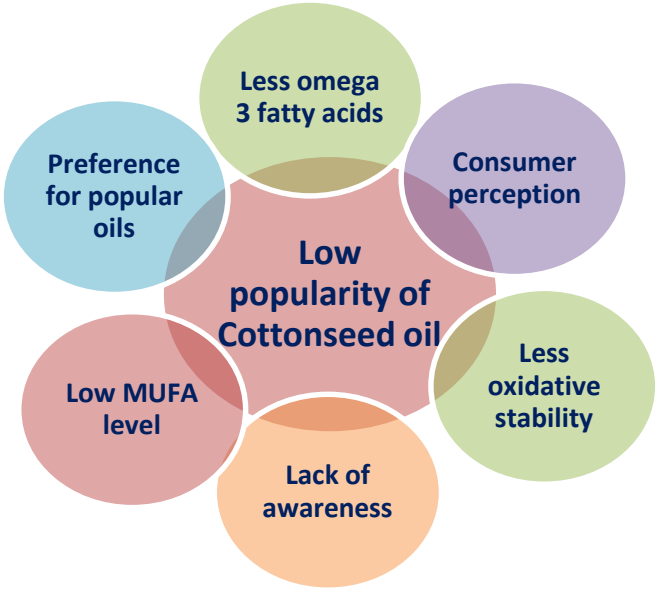
What is the issue ?

15-20% oil present in cottonseed

Refining





Blending as a cost-effective and simple strategy for improving the properties of cottonseed oil

- Balance fatty acid composition
- Improve oxidative stability
- Enhances taste
- Improve popularity among consumers

Refined Cottonseed oil

Sesame oil, Rice bran oil, Sunflower oil

Blended oil

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Description of the Innovation

- Cottonseed oil (CSO) was blended with MUFA rich oils such as sesame oil (SO), sunflower oil (SFO) and Rice bran oil (RBO) in 1:1 ratio to obtain a balanced fatty acid composition and enhanced frying stability.

- The blends were analyzed for fatty acid composition using gas chromatography, frying stability at 180 ℃ and thermo-oxidative stability using thermal gravimetric analysis (TGA).

- Natural antioxidant (Rosemary extract) was also supplemented in cottonseed oil for improving oxidative stability.

Features of the Innovation

- The blend (1:1) showed more balanced fatty acid composition than cottonseed oil in terms of PUFA/MUFA ratio.
- The MUFA content in CSO:RBO, CSO:SO and CSO:SFO blends was 27.5%, 26% and 25.2% respectively as compared to 17% in unblended cottonseed oil.
- The blends showed lower atherogenic and thrombogenic indexes (AI and TI).
- The blend showed better oxidative and frying stability than unblended cottonseed oil during frying of potato fries . The blends also showed less weight loss in TGA as compared to unblended CSO.
- Rosemary extract supplemented cottonseed oil showed better oxidative and storage stability than the control with low peroxide and p-anisidine values

Publications

JAOCS
Journal of the American Oil Chemists' Society
AOCS PRESS
AOCS WILEY

Manoeuvring the physicochemical and nutritional properties of vegetable oils through blending

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Abstract
Modification of vegetable oils is carried out to make them suitable according to their specific end use as most of the vegetable oils in original forms do not meet the recommended dietary allowance of saturated (SFA), monounsaturated (MUFA) and polyunsaturated (PUFA) fatty acids. Vegetable oils are modified using a variety of techniques including hydrogenation, interesterification, fractionation, and blending. However, blending is the most widely accepted method for improving the physicochemical properties, nutritive value and oxidative stability of vegetable oils because it is simple, cost-effective, non-destructive, and does not involve chemical treatments. Blending vegetable oils with contrasting fatty acid compositions or blending omega 3 fatty acids and antioxidants rich minor oils with major oils are two common strategies to formulate blends. Blended oil with balanced fatty acids could play substantial role in improving the consumers' health. However, while designing vegetable oil blends, it is important to keep in mind the intended application of the formulated blend, consumer's demands and also food laws. This review paper covers the literature related to blending of vegetable oils with a focus on effect of vegetable oils blending on their physicochemical and nutritional properties, health benefits and utility in food industries.

KEYWORDS
blending, health benefits, physicochemical and nutritional properties, vegetable oil

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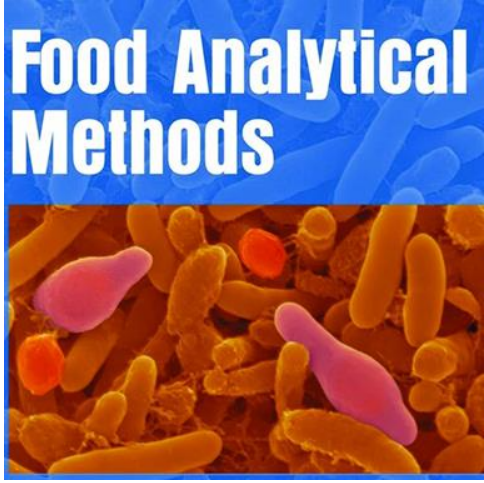

Cottonseed Oil: Extraction, Characterization, Health Benefits, Safety Profile, and Application

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Abstract

Cotton (*Gossypium* sp.) is a commercially important annual fiber crop; cottonseed oil (CSO) is an important product extracted from one of the byproducts of cottonseeds. Oil yield varies with cotton species, places, and season when cotton grown and extraction methods used for oil extraction. This review provides an overview on the extraction of CSO by different chemical, biochemical, and mechanical methods. Functional characterization and physicochemical evaluation of CSO demonstrated the superior quality as compared to other vegetable oils. Fatty acid profile showed higher percentage of unsaturated fatty acids and found to have promising health effects. Various physiochemical characteristics include iodine value, phosphorus content, moisture content, refractive index, specific gravity, saponification value, gossypol content, and antioxidants are also presented in the current review. Health benefits of CSO and its uses as edible oil in food and other industrial applications are

THANKS