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RHEOLOGICAL AND WATER-HOLDING CHARACTERISTICS OF YOGHURTS ENRICHED WITH FRUIT BY-PRODUCTS

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Abstract

Fruit peels are food waste that is a rich source of dietary fiber, terpenes, and phenolic compounds. Since fruit peels are renewable, sustainable, and affordable, they can be included as natural resources in product enrichment in the food industry. This study aimed to investigate the enrichment of yogurt with fruit peel powders of lemon (LP), orange (OP), and pomegranate (PP).

Unheated and heated fruit peel powder solutions were added to the yogurt. The water holding capacity (WHC) of the yogurt samples was determined by determining the weight of the serum retained after centrifugation and calculated as a percentage. The pH value of the yogurt samples was measured using a pH meter. The rheological properties of the yogurt samples were determined by using a rotational rheometer with a cone-plate sensor by applying a stress sweep test and a controlled ramped shear rate test.

The rheological properties and WHC of yogurts enriched with heated fruit peel powder solutions were found to be higher than unheated samples. While there was no significant difference between the pH values, there was a difference between the WHC of yogurt samples. Yogurt enriched with heated LP resulted in the highest WHC and apparent viscosity. The shear stress increased more with the shear rate in heated LP-enriched yogurt. Yoghurts enriched with heated OP and LP had the highest consistency coefficient and thixotropy. The yield stress of the yogurt enriched with heated OP was found to be the highest.

Fruit peels were shown to be a practical way of enriching yogurt with functional food components such as fiber, phenolic compounds, and others. They not only contributed to nutritional value and flavor but also improved the rheological properties and water-holding capacity of the product.

***Key words**: Yogurt, Rheology, Fruit peel powder, Waste Recycling, Sustainability.*