



## Impact of adding onion peel powder on the nutritional and quality of pan bread

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**SUMMARY.** The purpose of this study is to evaluate the impact of adding onion peels powder (OPP) to bread at levels of 0.5, 1 and 1.5 % as dietary fiber sources and antioxidants. The opp's chemical composition showed that it had  $28.61 \pm 3.1136\%$  fiber,  $4.33 \pm 88192\%$  and  $2.73 \pm 31607\%$  protein and minerals such Fe, Mn, Cu, and pb, the Folin-Ciocalteu technique was used to calculate the total phenolic content. meanwhile, the aluminum chloride complex colorimetric method was used to determine the flavonoid concentration, The total phenol content was 50 mg /100g and the total flavonoid content was 30 mg /100g according to the results, sensory analysis revealed that adding up to 0.5% OPP in place of wheat flour in bread produced satisfactory consumer acceptability. The findings suggested that bread enhanced with powdered onion peel might be made as a useful food. There is a lot of potential for onion peel to be developed as a baked products and natural antioxidant.

**RESUMEN.** El propósito de este estudio es evaluar el impacto de agregar cáscaras de cebolla en polvo (OPP) al pan en niveles de 0,5, 1 y 1,5 % como fuente de fibra dietética y antioxidantes. La composición química del opp mostró que tenía  $28.61 \pm 3.1136\%$  de fibra,  $4.33 \pm 88192\%$  y  $2.73 \pm 31607\%$  de proteína y minerales como Fe, Mn, Cu y pb, se utilizó la técnica de Folin-Ciocalteu para calcular el contenido fenólico total. mientras tanto, se utilizó el método colorimétrico del complejo de cloruro de aluminio para determinar la concentración de flavonoides. El contenido de fenol total fue de 50 mg/100 g y el contenido de flavonoides total fue de 30 mg/100 g según los resultados, el análisis sensorial reveló que sumando hasta 0,5% de OPP en lugar de harina de trigo en el pan produjo una aceptabilidad satisfactoria por parte del consumidor. Los hallazgos sugirieron que el pan enriquecido con cáscara de cebolla en polvo podría convertirse en un alimento útil. Existe un gran potencial para que la cáscara de cebolla se desarrolle como producto horneado y como antioxidante natural.

### INTRODUCTION

Bulbous vegetables of the Liliaceae family, onions (*Allium cepa* L.) are important both domestically and internationally. The primary purpose of growing onions is for food. they are prized for both their nutritional content and deliciousness. Onion bulbs, which can be red, white or yellow in color are eaten raw, ripe, pickled, or powdered when they are still delicate. the bulbs can be boiled, fried, or consumed raw and added to soups and stews. Additionally, they are preserved as pickles. soups and salads can also contain onion leaves (Jyothi and Lakshmi, 2021). by turning waste streams into valuable goods and producing food with minimal waste, this effort would lessen the environmental impact of disposing of onion trash (Waldron, 2001). Because of their advantageous technological or nutritional qualities, by-products are prospective sources of chemicals that may be employed. These plant sources could include, for instance, onion peel and other

byproducts of processing vegetables. The onion (*Allium cepa* L.) is the second most widely grown vegetable in the world and hundreds of tons of trash are produced each year in the European Union alone from its processing. (Choi et al., 2015). In recent years, there has been a growing interest in onion peel or onion-peel extracts (either water or ethanol) as a functional food ingredient. These extracts have been used in meat patties, wheat bread, and gluten-free bread to extend the shelf life of the products or promote health benefits (Bedrnicek et al., 2020).

### MATERIALS

White onion, wheat flour, sugar, milk were bought from market in Basrah, Iraq.

### Preparation of Onion peel Powder

Onion peel powder (OPP) was made using the procedure outlined by Masood et al. (2020) A steril-

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