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FULL ARTICLE

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Phenolic extracts of the leaves of *Psidium guineense* Sw. improve the shelf life of sunflower oil and baked cake and antioxidant status of Wistar rats

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Abstract

The potential of the ethanolic extract of *Psidium guineense* Sw. leaves (PGLE) to protect food from oxidation was evaluated using sunflower oil and baked cake as food models. The nutritional quality of PGLE was evaluated by feeding Wistar rats with PGLE for 150 days. *Psidium guineense* Sw. leaves contain 195.25 ± 9.56 mg g^{-1} phenolic substances, 51% of which are *o*-diphenols. Protection factor, the ability of *Psidium guineense* Sw. leaves to protect sunflower oil against oxidation (1.82 ± 0.13), was not significantly affected by heat treatment compared to BHT. Formation of oxidation products, peroxide and hexanal in PGLE- and BHT-added cake was significantly lower (<5 ppm over 28 days) compared to control with no added antioxidants. Therefore, addition of PGLE improved the shelf life of sunflower oil and oxidative stability of baked cake. PGLE also improves the serum antioxidant capacity and inhibits lipid and protein oxidation in Wistar rats.

Practical applications

PGLE is a rich source of phenolic substances. Due to high antioxidant activity, pleasant sensory quality and high thermal stability, PGLE can be used to improve the shelf life of baked cake and edible oils. As PGLE also improves serum and plasma antioxidant properties without causing any toxicity, nutritional food supplements can be developed based on PGLE.

KEYWORDS

baked cake, food shelf life, guava, polyphenolic antioxidants, *Psidium guineense* Sw., sunflower oil

1 | INTRODUCTION

Psidium guineense Sw. is a guava species distributed in South America, some parts of Africa and South Asia. It is a plant of interest to many researchers due to its high phenolic content, antioxidant properties and antibacterial properties of the extracts. Both leaf and fruit extracts have been investigated for antioxidant and antibacterial activities. Aqueous extracts of the leaves of *Psidium guineense* Sw. display antibacterial activity against *Staphylococus aureus*. A combination of leaf extracts with antibiotics provides a synergistic effect on the antimicrobial activity (Fernandes, Mesquita, Randau, Franchitti, & Ximenes, 2012). Alcoholic extracts of the leaves of *Psidium guineense* Sw. also show antimicrobial activity against oral microorganisms (Vieira, Gondim, Santiago & Valenca, 2012). Essential oil extracted from the leaves of the plant shows antioxidant, antiinflamatory, antiproliferative and antibacterial activities (Nascimento et al., 2018). Methanol extracts of the fruit of *Psidium guineense* Sw. show concentration dependent

