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Carotenoid composition in twenty ulam species as potential halal active pharmaceutical ingredients
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Abstract

Ulam is a traditional Southeast Asian vegetable that has been consumed and practised by old folks for decades. Several studies have found that ulam has numerous benefits, including being high in natural antioxidants, antimicrobials, vitamins, and minerals and being used as an early illness preventive method. Even yet, many ulam have yet to be identified and documented. This study aimed to identify the carotenoid content and composition in a variety of ulam species as a potential halal active pharmaceutical ingredient. The individual carotenoid composition was examined in twenty ulam species with three groups of distinct parts: leaves, fruits, and rhizomes. Using HPLC analysis, neoxanthin, lutein, and β -carotene were the primary carotenoids discovered in the overall species. The results presented 12 species with 4 carotenoid pigments, 4 species with 3 carotenoid pigments, 2 species with 2 carotenoid pigments and 2 species with 1 carotenoid pigment. *Mentha arvensis* ($51.38 \pm 0.24 \mu\text{g/g DW}$) has substantially greater neoxanthin. In contrast, *Manihot esculenta* ($1179 \pm 9.90 \mu\text{g/g DW}$), ($457 \pm 2.12 \mu\text{g/g DW}$), and ($2434.5 \pm 5.66 \mu\text{g/g DW}$) had significantly higher β -carotene, lutein, and violaxanthin, respectively. Naturally available carotenoid sources as prospective components for halal pharmaceutical products will be discovered as a result of this research. These proven findings have also given communities the confidence to include ulam in their daily diets because it is a natural source with exceptional biological qualities. © 2023 The Authors. Published by Rynnye Lyan Resources.

Author Keywords

Active pharmaceutical ingredients; Carotenoids; Halal; Ulam

Index Keywords

beta carotene, carotenoid, neoxanthin, pigment, violaxanthin, xanthophyll; antimicrobial activity, antioxidant activity, Article, cassava, diet, fruit, high performance liquid chromatography, medicinal plant, *Mentha arvensis*, nonhuman, plant leaf, religious slaughter, rhizome, ulam, vegetable

Chemicals/CAS

beta carotene, 7235-40-7; neoxanthin, 14660-91-4; violaxanthin, 126-29-4; xanthophyll, 127-40-2, 52842-48-5

Tradenames

Agilent 1200, Agilent, United States

Manufacturers

Agilent, United States

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