

DIETARY FIBRE CHARACTERISTICS AND ANTIOXIDANT ACTIVITY OF SESAME SEED COATS (TESTAE)

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The dietary fibre contained in the seed coats (testae) of sesame, by-products of the dehulling processes during the manufacture of sweetened sesame paste (halaweh), were evaluated with two assays: the AOAC enzymatic-gravimetric method and the enzymatic-chemical method. Functional properties and antioxidant activity of sesame seed coats were also determined. The total, insoluble, and soluble dietary fibre contents measured were significantly higher using the AOAC method, than with the enzymatic-chemical method. The dietary fibre contained high amounts of neutral sugars (15.11 g/100 g seed coat dry matter), insoluble uronic acids (10.52 g/100 g seed coat dry matter), and lignin (5.42 g/100 g seed coat dry matter). Physical property analyses showed a high positive correlation between particle size reduction of seed coat, water holding capacity, and oil holding capacity; however, there was a negative correlation with bulk density. Sesame testae showed a relatively high polyphenol content (9.9 mg/g of seed coat dry matter). Aqueous methanol, ethanol, and acetone extracts of seed coats yielded similar polyphenol levels (~75 mg/g of extract), higher than those found in aqueous extracts (52.7 mg/g of extract). Aqueous organic solvent extracts possessed higher antioxidant activity than water extracts. Our results suggested that sesame seed coats can be used in the preparation of low calorie, high fibre, and antioxidant-rich foods.

Keywords: Antioxidant activity, AOAC enzymatic-gravimetric method, Dietary fibre, Enzymatic-chemical method, Oil holding capacity, Polyphenols, Sesame seed coat, *Sesamum indicum* L., Water holding capacity.

INTRODUCTION

Sesame (*Sesamum indicum* L.) is cultivated in a number of Asian and African countries. India, Myanmar, China, Sudan, Uganda, Nigeria, and Ethiopia, in descending order, were the world's major growers, responsible for 75% of total world production in 2007 according to figures reported by the FAO.^[1] Eighty percent of Tunisia's requisite sesame seeds are imported from Sudan and 20% from Egypt.^[2] The quantity imported rose from 3400 tons in 1990 to 10,600 tons in 2005.^[2] Most of Tunisia's imported sesame

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