

EXTRACTION OF SPAGHETTI SQUASH (*CUCURBITA PEPO* L.) BY USING SUPERCRITICAL CARBON DIOXIDE EXTRACTION METHOD

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Abstract

Spaghetti squashes are produced for the production of snacking seeds in significant amounts in the Central Anatolia region and Thrace region in Turkey. Spaghetti squash seeds are used as snacking seeds, but fruits are the agricultural by-products which are evaluated as animal feed.

In this research, carotenoids were extracted from by-product of spaghetti squash by using supercritical carbon dioxide extraction. Ethyl alcohol was used as co-solvent for extraction studies. Temperature and pressure kept constant during extraction process. Extraction experiments were carried out at 60 °C and 350 bar. Total extraction time was 180 minutes. Total carotenoids and cupric reducing antioxidant capacity (CUPRAC) analysis was conducted by taking samples from the extract at: 30th, 60th, 90th, 120th, 150th and 180th minutes during the extraction process.

The total carotenoid content of spaghetti squash is 1.81 g/100 g dry matter. The maximum carotenoid extraction occurred within the first 30 minutes. The amount of the extracted carotenoids at the 30th, 60th, 90th, 120th, 150th and 180th minutes were calculated as 0.293, 0.253, 0.246, 0.238, 0.232, 0.222 g/100 g dry matter respectively. The total amount of carotenoids extracted at the end of the extraction process is 1.484 g/100 g dry matter. The antioxidant capacity of spaghetti squash is 287.23 mg Trolox/100 g dry matter. Antioxidant capacity at each time interval is 92.78, 49.21, 32.08, 18.14, 14.48, 11.26 mg Trolox/100 g dry matter respectively. The total antioxidant capacity at the end of the extraction process is 217.97 mg Trolox /100 g dry matter.

As a result, it was observed that the amount of total carotenoid and antioxidant capacity gradually decreased as time elapsed. Cumulative total carotenoid content and antioxidant capacity are increased as the time progressed under constant temperature and pressure.

Key words: Supercritical carbon dioxide, Spaghetti squash, Carotenoids, CUPRAC.