

Title Mini watermelon- a lycopene containing functional food
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Abstract

Several epidemiological studies have linked reductions in some cancers, notably prostate cancer, and cardiovascular disease to diets rich in the carotenoid lycopene. Watermelons are one of the richest sources of lycopene in fresh produce and a recent clinical study found uptake of lycopene from non-heat processed watermelon similar to that of heat processed tomatoes. At the same time, new plant breeding selections have resulted in small seedless watermelons (mini watermelons) that weigh less than three kg and are dark red in color. The lycopene and carotenoid composition in these new selections is not known. Our objectives were to determine total lycopene content and carotenoid profiles of mini watermelon selections. Twenty watermelons each from seven varieties of mini watermelons were harvested from randomized complete block research field plots. Melons were cut in half longitudinally and heart and locule tissues were sampled. A subsample of 30 g of tissue was homogenized and extracted with 10 ml hexane, 10 ml ethanol, 5 ml acetone and 3 ml ddi water. One ml of hexane-extracted carotenoids was filtered and injected into HPLC with photo diode array detector and Water C-30 carotenoid column. Peak areas were compared to authentic carotenoid standards and calculations were based upon extinction coefficients. Average lycopene concentrations of the mini watermelons ranged from 6700 to 9600 ug/100g fw. Several varieties had higher lycopene levels than that previously reported for seeded and seedless watermelons (3700 to 6900 ug /100g.). Two varieties were unusually high in beta-carotene with averages of 1100 to 1400 ug/100g. These new small watermelon varieties provide a natural food source of both lycopene and beta-carotene and may have potential as functional foods. These results provide new insights for plant breeders on carotenoid inheritance. Results also provide identification of a high lycopene and beta-carotene containing natural food for consumers wanting to increase lycopene and beta-carotene servings.