

SUNLIGHT INFLUENCE OF LYCOPENE CONTENT IN TOMATOES VARIETIES

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Abstracts

In this paper was to determine the lycopene content in some tomatoes varieties in different precocity steady (early-Export II and middle tardy-Ace Royal and Campbell 1327), cultivated in field condition, in west area country. The experience was done in a cambic cernosium soil, in sunny and shade field, with high natural fertility potential favorable vegetables cultivation.

Keywords: *lycopene, tomatoes, precocity steady, field*

Introduction

The tomato is the fruit of the plant *Lycopersicon esculentum* and is a member of the *Solanaceae* family. Tomatoes are a great vegetable loaded with a variety of vital nutrition. Tomatoes are now available year-round, the truly wonderful qualities of tomatoes are the best when then they are in season from July through September (<http://whfoods.org>).

Lycopene is the most abundant carotenoid present in red tomatoes, comprising up to 90% of the total carotenoids present. Lycopene is the pigment principally responsible for the characteristic deep-red color of ripe tomato fruits and tomato products. It has attracted attention due to its biological and physicochemical properties, especially related to its effects as a natural antioxidant. Although it has no provitamin A activity, lycopene does exhibit a physical quenching rate constant with singlet oxygen almost twice as high as that of beta-carotene. This makes its presence in the diet of considerable interest. Increasing clinical evidence supports the role of lycopene as a micronutrient with

important health benefits, because it appears to provide protection against a broad range of epithelial cancers (Shi, 2000).

Exposure to direct sunlight would decrease the development of lycopene if interacting with unfavorably high temperatures. Lycopene has been seen as a good indicator for fruit maturity stage (Dumas, 2006).

Lycopene in tomatoes and tomato products is routinely determined by extraction into organic solvents and spectrophotometer quantification (Sharma, 1996)

Experimental

Reagents and equipment: Were used chemicals and reagents from Merck; deionized water. Absorption determination for lycopene content was using Spectrophotometer UV-VIS SPECORD 205 by Analytik Jena.

Samples preparation: Tomatoes samples were collected on June-July (varieties Export II) and August (varieties Ace Royal and Campbell 1327).

Determination of lycopene: Lycopene in the tomato samples was extracted by hexane:ethanol:acetone (2:1:1) mixture following the method of Sharma and Le Maguer (1996). One gram of the homogenized samples and 25 mL of hexane:ethanol:acetone, which were then placed on the rotary mixer for 30 min., adding 10 mL distilled water and was continued agitation for another 2 min. The solution was then left to separate into distinct polar and non-polar layers. The absorbance was measured at 472 nm and 502 nm, using hexane as a blank. The lycopene concentration was calculated using its specific extinction coefficient (E 1% 1 cm) of 3450 in hexane at 472 nm (Toor, R.K, 2006) and 3150 as 502 nm (Binoy, 2004; Gergen, 2004). The lycopene concentration was expressed as mg/100g fresh matters (Toor, 2006). All determination was repeated for three times.

Results and Discussions

The lycopene contents in tomatoes samples are presented in table 1.

Table 1. Total lycopene contents in tomatoes

Tomatoes varieties	Lycopene content (mg/100g fresh matter)			
	$\lambda = 472 \text{ nm}$		$\lambda = 502 \text{ nm}$	
	Sunny field	Shade field	Sunny field	Shade field
Export II	3.85	2.28	4.34	1.74
Ace Royal	6.82	3.15	4.45	3.28
Campbell 1327	5.05	2.09	6.41	2.59

The lycopene contents varied from 2.04 – 6.94 mg/100 g fresh matter (Binoy, 2004). Lycopene content of tomatoes samples varied from 3.85-6.82 mg/100g fresh matter for tomatoes cultivated in sunny field and from 1.74-3.28 mg/100g fresh matter for tomatoes cultivated in shade.

High-quantity lycopene was accumulated in middle tardy tomatoes varieties (4.45-6.82 mg/100g fresh matter) and the less quantity (3.85-4.34 mg/100 g fresh matter) is observed in the early tomatoes varieties.

Lycopene content varied from tomatoes varieties, difference was observed between two middle tardy varieties: Ace Royal and Campbell.

Conclusions

Sunlight influenced the lycopene assimilation in tomatoes fruits. Lycopene content is different from a variety of tomatoes to another. The precocity steady influences lycopene accumulation in tomatoes fruit.

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