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# CHANGES IN CAROTENOID CONTENT OF ORGANIC TOMATO POWDERS DEPENDING ON DRYING PARAMETERS

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***Abstract***
*There are known that the functionalities of powdered natural ingredients from food products are strongly dependent on the chemical composition. The pre-treatment and type of drying can cause changes in amounts of nutritional compounds (vitamins, carotenoids, polyphenols) of fruits and vegetables. Therefore, this study investigates the effects of different drying treatments (hot air at 40 and 70 °C) on the carotenoid content of powders obtained from juice and blanched fresh organic tomatoes.*

***Keywords**:* organic tomatoes, drying, powder, carotenoids

## 1. Introduction

Currently, there is a growing interest and industry demands for the development of new natural products to be used as functional foods. Powder products from fruits and vegetables were the mostly used functional ingredient in the formulation of food products because of easily preservation, transport, store, and process (Cuq *et al*. 2011). Drying is one of the most important stages for the production of powders.
On the other hand, the utilisation of organic products as edible sources for natural ingredients has been a great preoccupation in recent years due their enhanced nutritional/environmental values. Organic tomatoes are known as a natural source rich in carotenoids. The aim of the present work is to investigate the effects of different drying treatments (hot air at 40 and 70 °C) on the carotenoid content of powders obtained from organic tomatoes.

## 2. Material and method

Two types of organic tomato (var. *Tigrella*) powders were used in this work. One powder was obtained from juice prepared by crushing of fresh organic tomatoes for 50 s at 9000 rpm in a knife mill followed by hot-air drying at 70 °C. The second powder was made from organic tomato slices submitted to hot-water blanching pre-treatment at 95 °C for 1.5 min and next hot-air dried at 40 and 70 °C in a dehydrator.
Carotenoids were extracted with petroleum ether (1:30 (w/v)) using five successive extractions and performed by spectrophotometric methods. The total carotenoid content of the extract solutions was quantified as described by (Rodriguez-Amaya and Kimura, 2004), whereas the total lycopene content was determined as given by (Pelissari *et al*. 2016) and expressed as expressed as milligram per 100 gram of dry weight (mg/100 g DW).

## 3. Results and discussion

In blanched tomato powders, the total carotenoid content appear in low concentrations that in juice powder. By contrast, the total lycopene content are present in extremely higher amounts in blanched

tomato powders and this could result from the oxidative degradation of lycopene in unblanched tomatoes. Moreover, it can be attributed to the fact that coupled blanching and drying releases carotenoids from lipid membranes and complexes, resulting in better extraction (Raponi *et al*. 2017). Regarding the drying temperatures, for blanched tomatoes dried at 70 °C resulted in an increase of both total carotenoid content and total lycopene content compared to their counterparts at 40 °C.

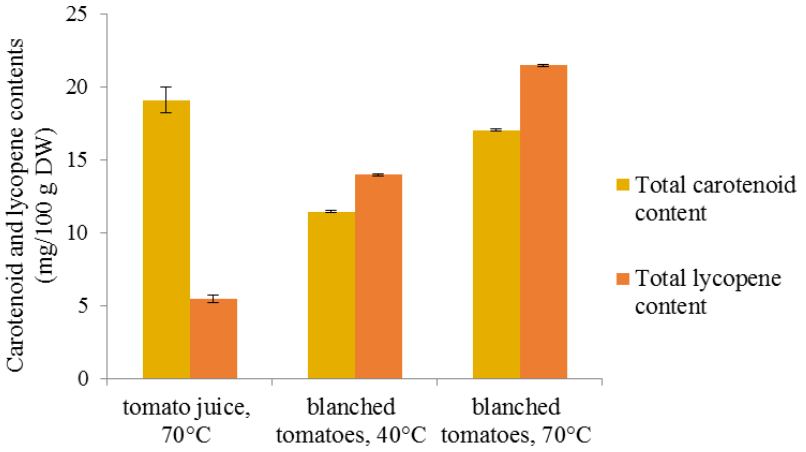


*Fig. 1 Variation of carotenoid and lycopene contents in organic tomato (var. Tigrella) powders*

## 4. Conclusions

This study reports that there are variations in carotenoid contents which depend on both drying method and the form of raw material to be processed.

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