a* values to follow lycopene concentration during ripening and storage of tomato (cv. Caruso)

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INTRODUCTION

Tomato ripening is a regulated process during which colour, flavour, aroma and texture change in a coordinated manner. Tomato fruit colour is an important quality attribute, and it is the initial aspect evaluated by the consumers. Fruit colour is related to the lycopene and chlorophyll content changes during the ripening process.[1]
This research work aims to correlate the colour changes measured objectively with the lycopene concentration in tomatoes during ripening during storage at room temperature.

MATERIAL AND METHODS

Tomatoes at the stage of breakers (stage 2[24]) were exposed to light at room temperature (21°C and 26°C) and left to ripen during 10 days.
This colour stage was chosen because consumers may purchase tomatoes breakers tomatoes and leave them ripen at room temperature.
Tomatoes were analysed for colour and lycopene content each day. Replicates of 3 tomatoes were used for each day.
The method used for the determination of lycopene concentration was adapted from Goula *et al.*4

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RESULTS

It was found a strong positive correlation between the a* values of tomato peel and pulp and lycopene concentration (ρ= 0.76 and ρ= 0.79, respectively) at both temperatures (21°C).
Low lycopene contents correspond to low a* values.
The evolution from colour satge 4 to colour stage 5 involves dramatic increase in the lycopene from 9 mg/ 100 g TSS to 43 mg/100 g TSS.
The storage temperature (21 or 26°C) does not influence the lycopene content for a specific stage of ripening.

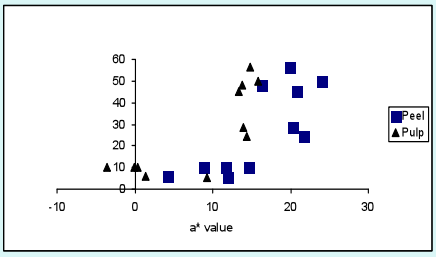

Fig. 1 – Lycopene concentration of tomato in function of a* value of the peel during ripening at 21°C.

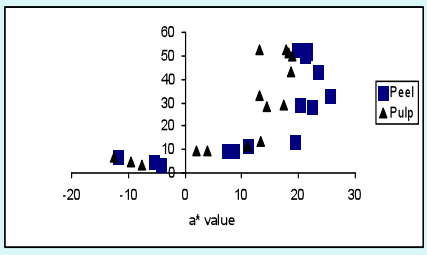

Fig. 2 – Lycopene concentration of tomato in function of a* value of the pulp during ripening at 26°C.

CONCLUSIONS

The a* parameter (CIE-L*a*b*) is a good parameter for quantifying the lycopene level in tomatoes. The evolution from colour stage 4 to colour stage 5 at room temperature (21°C and 26°C), involves dramatic increase in the lycopene content. The a* value for the peelis a good indicator for the consumption of tomato (*cv.* Caruso) since colour measurement of the peel by CIE- L*a*b* is not a destructive method.

REFERENCES
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[4]Goula AM, Adamopoulos KG, Chatzitakis PC, Nikas VA 2005 *Journal of Food Engineering.*