



**INTERNATIONAL CONFERENCE
- BOOK OF ABSTRACTS -**

**ENVIRONMENTALLY FRIENDLY AND SAFE TECHNOLOGIES FOR
QUALITY OF FRUITS AND VEGETABLES**

**14-16 JANUARY 2009
UNIVERSIDADE DO ALGARVE
FARO, PORTUGAL**



CONVENER

Carla Nunes

ORGANIZING COMMITTEE

Carla Nunes, Universidade do Algarve, Portugal
Amílcar Duarte, Universidade do Algarve, Portugal
Bart Nicolai, Katholieke Universiteit Leuven, Belgium
Maria Dulce Antunes, Universidade do Algarve, Portugal
Maria Emília Costa, Universidade do Algarve, Portugal
Maribela Pestana, Universidade do Algarve, Portugal
Miguel Salazar, Instituto Universitário Dom Afonso III, Portugal

SCIENTIFIC COMMITTEE

Carla Nunes, Universidade do Algarve, Portugal
Amílcar Duarte, Universidade do Algarve, Portugal
Angelos Kanellis, Aristotle University of Thessaloniki, Greece
Bart Nicolai, Katholieke Universiteit Leuven, Belgium
Brion Duffy, Agroscope FAW Wädenswil Bacteriology, Switzerland
Christian Larrigaudière, Centre UdL-IRTA, Spain
Domingos de Almeida, Universidade do Porto, Portugal
Josef Streif, Inst. Sonderkulturen & Produktsphysiologie Hohenheim, Germany
Krzysztof Rutkowski, Research Inst. of Pomology and Floriculture, Poland
Maria Dulce Antunes, Universidade do Algarve, Portugal
Maria da Graça Barreiro, Instituto Nacional de Investigações Agrárias, Portugal
Mustafa Erkan, Akdeniz University, Turkey
Paolo Bertolini, Università de Bologna, Italy
Pol Tijskens, Wageningen University, Netherland
Shimshon Ben-Yehoshua, A.R.O. Volcani Centre, Israel

CONFERENCE SECRETARIAT

Carla Santos, CDCTPV, Universidade do Algarve, Portugal

HEAT TREATMENT EVALUATION ON QUALITY AND SAFETY OF WHOLE TOMATO (*Lycopersicum esculentum* L.) FRUITS

Joaquina Pinheiro¹, Carla Alegria², Marta Abreu², Isabel Fernandes², Elsa M. Gonçalves², Cristina L.M. Silva¹

¹Escola Superior de Biotecnologia, Universidade Católica Portuguesa, Rua Dr. António Bernardino de Almeida, 4200-072 Porto, Portugal

²Departamento de Tecnologia das Indústrias Alimentares, Instituto Nacional de Engenharia, Tecnologia e Inovação, Estrada Paço do Lumiar, 22, 1649 – 038 Lisboa, Portugal

Tomatoes (*Lycopersicum esculentum* L.) are a climacteric fruit, and during ripening several important changes occur on physical-chemical quality. Treatments, such as heat treatment (HT), have been investigated for controlling postharvest fruits and vegetables quality. HT inhibits biochemical pathways involved in ripening, like chilling injury and external skin damage during storage.

The main objective of this work was to evaluate the immediate effects on quality and safety attributes, like colour (CIELab parameters), texture [Maximum force – MF, (%)], total phenolics content [TPC, (%)], peroxidase activity [POD, (%)], microbial count and moulds & yeasts (Log_{10} CFU.g⁻¹) of HT on mature-green tomatoes at temperature ranging of 40 to 50°C and different times.

The initial values of fresh tomatoes in terms of a^* , microbial count and moulds & yeasts were, -12.94 ± 0.80 ; $1.82 \pm 0.45 \text{ Log}_{10} \text{ CFU.g}^{-1}$ and $1.65 \pm 0.41 \text{ Log}_{10} \text{ CFU.g}^{-1}$, respectively. HT did not affect significantly ($p > 0.05$) the tomatoes colour. In terms of texture, a reduction of 10% MF was observed at 50°C_15min. The enzymatic activity of POD increased at all temperatures during the first 30 min at 40°C ($\approx 37\%$), 20 min at 45°C ($\approx 120\%$) and 15 min at 50°C ($\approx 43\%$). In relation with TPC an increase of ca. 20% at 40°C_60 min and 50°C_15 min was observed, when compared to fresh tomatoes. A total elimination of microbial count and moulds & yeasts was successfully found at 50°C and at 45°C_20 min.

In conclusion, the more effective HT in terms of total elimination of microbial count and moulds and yeasts, without negatively affect on tomatoes quality attributes appears to be at 50°C. However, more studies are required to conclude about the efficiency of HT on tomatoes quality and safety during shelf life period.

Keywords: heat treatment, quality, safety, tomato