



Tropentag, October 11-13, 2006, Bonn

“Prosperity and Poverty in a Globalised World—  
Challenges for Agricultural Research”

## Antioxidant Capacity and Bioactive Compounds of Tomato Varieties as Affected by Processing Method

ANNIA GONZALEZ RIVERO<sup>1</sup>, ANNA KEUTGEN<sup>1</sup>, ELKE PAWELZIK<sup>2</sup>

<sup>1</sup>*University of Göttingen, Crop Science, Germany*

<sup>2</sup>*Georg-August-University Göttingen, Institute of Agricultural Chemistry, Germany*

### Abstract

In recent years, the agri-food sector and consumers have begun to look at food not only for basic nutrition, but also for health benefits. An increased interest in tomato and its products has been created by the fact that their consumption has been correlated with a reduced risk of some types of cancer and cardiovascular disease, possibly due to the content of some bioactive compounds.

The purpose of this study was to investigate the variations in the contents of the antioxidants: lycopene, ascorbic acid and phenolics, and their contribution to the antioxidant activity in nine selected tomato genotypes from Cuba and Germany, which differ in colour, size and shape. Furthermore, the nutritional stability of tomato products was assessed after the different processing methods as freezing, concentration to obtain puree, and ketchup production.

Significant differences were found between lycopene, ascorbic acid, total phenolic content and total antioxidant capacity among the various genotypes and processing methods. There was a significant reduction in the ascorbic acid content for the processed samples, compared with the frozen, with the highest values for Goldene Königin (GK), Yellow Pearshaped (YP) and Rilia (CRi). There was a remarkable increase in lycopene levels of puree, compared with frozen and ketchup. CRi, Suso F1 Hybride (SR), Vyta (V) and CIMA (C) had the highest content of lycopene in all processing methods. Significant differences were found in the phenolic content of frozen, puree and ketchup. The lower values corresponded to frozen samples and the highest to ketchup. GK, SR, V and C showed the highest concentration of phenolic compounds in all the processing methods. Roma (CRo), CRi and Campbell-28 (CC) had highest content of lycopene and phenolic compounds only in the processed products. Total antioxidant capacity of all cultivars increased in the processed samples, with the highest values for the ketchup. The best tomato product according to the antioxidant capacity was ketchup.

**Keywords:** Antioxidant capacity, bioactive compounds, processing methods, tomato