



Tropentag, October 9-11, 2007, Witzenhausen

“Utilisation of diversity in land use systems:  
Sustainable and organic approaches to meet human needs”

## Antioxidant Capacity of Tamarillo Fruit (*Cyphomandra betacea*)

ANDRÉ GORDON, ROBERTA B. RODRIGUES, FRIEDHELM MARX, MENELAOS PAPAGIANNPOULOS

*University of Bonn, Institute of Nutrition and Food Sciences, Germany*

### Abstract

Due to a research project promoting underestimated fruits from Latin and South America (PAVUC) supported by the European Union in order to develop fruit products with added values, an investigation was performed on tamarillo fruit. Tamarillos originate from the Andeans and are increasingly offered on European fruit markets. Evaluation of the antioxidant capacity was implemented by using the GC based TOSC (Total Oxidant Scavenging Capacity) assay. In total two red and one yellow variety were examined. Results demonstrated an intermediate antioxidant activity towards peroxy radicals and peroxy nitrite whereas the red varieties performed better than the yellow. Towards hydroxyl radicals no cultivar related differences could be constituted.

Determining the antioxidant activity of different edible parts the pericarp, the seed jelly including the kernels dominated in comparison with the fruit pulp in reference to the three different investigated reactive oxygen species. However, only a small variation occurred towards hydroxyl radicals.

In general, ascorbic acid was identified as a potent antioxidant constituent in tamarillo fruit. Its antioxidant efficiency was good against peroxy radicals. Towards peroxy nitrite ascorbic acid demonstrated a moderate antioxidant behaviour and no activity in relevant concentrations was exhibited towards hydroxyl radicals. Amounts of ascorbic acid were 4.5 fold higher in the seed jelly rather than the fruit pulp. Compared to oranges, tamarillo fruit contains a similar amount of ascorbic acid between 25–30mg/100g fresh weight of the edible part but presents a pronounced higher TOSC value against peroxy radicals which may be explained by the anthocyanins. The seed jelly contains in total eight anthocyanins which are derived from the aglycons cyanidine, delphinidine, and pelargonidine. A pelargonidin-hexosyl-desoxyhexoside and a cyanidine-hexosyl-desoxyhexoside are quantitatively dominating within the seed jelly. Furthermore, a variety depending difference concerning the anthocyanin pattern was revealed.

Anthocyanins were proven to be good antioxidants against peroxy radicals but not against peroxy nitrite and hydroxyl radicals. The measured activity against the both latter suggests that maybe other compounds take part in antioxidant reactions.

**Keywords:** Antioxidant capacity, hydroxyl, peroxy, peroxy nitrite, tamarillo, TOSC