

Research Internship / Forschungspraktikum 10 CP

“Micronutrient Potentials of *Solanum lycopersicum* for Food Product Fortification”

Preliminary Test Material: *Solanum lycopersicum*

Problem Statement:

The tomato is the edible berry of the plant *Solanum lycopersicum*, commonly known as the tomato plant. It is probably the world's favourite fruit, traditionally eaten as a vegetable, and a key part of countless recipes around the globe. Tomatoes are not only delicious but highly nutritious and packed with micronutrients. They are a great source of vitamins A, C, and K, as well as potassium and fiber. They are also rich in antioxidants like lycopene, which has been linked to a reduced risk of heart disease and aid immune function.

The availability of Solanium tomato is highly seasonal and frequently unpredictable due to rising pest attacks, changing climates, and even worsening security challenges in the African countries. Given the high perishability of tomatoes, it is imperative to discover a nutrient-friendly and easily adaptable technique of preservation. One such method is osmotic dehydration, which has the added benefit of retaining nutrients and other bioactive components. The economic utilization of *Solanum lycopersicum* can be further enhanced by including it into food products for value addition. This study therefore aims at extraction and identification of functional ingredients from tomatoes and its use in food product fortification. If clarity regarding Nagoya is achieved, a transfer to the snake tomato becomes possible.

Task:

- Osmotically dehydrate the *Solanum lycopersicum* fruits using optimal conditions.
- To dry the osmotically dehydrated fruits with different drying methods (hot air oven and freeze drying methods) and determine the best methods in terms of nutrient content.
- Laboratory analysis of micronutrients, vitamins (such as vitamin C), polyphenols, carotenoids and antioxidant properties of the plant materials. This offers the use of standard laboratory methods for extraction, spectrophotometric analysis of total polyphenols; identification of polyphenols and carotenoid profiles using the High-Performance Liquid Chromatography (HPLC) techniques.

Start Date:

Starting immediately

Contact Person:

Dr. Esther Omah, esther.omah@tum.de and Dr. Lara Etzbach, lara.etzbach@tum.de