



Tropentag, September 9-11, 2020, virtual conference

“Food and nutrition security and its resilience  
to global crises”

## Effect of Cooking Time on Quality Traits of Tanzanian Vegetable Sauces

AMINA AHMED<sup>1</sup>, GUDRUN B. KEDING<sup>2</sup>, ELKE PAWELZIK<sup>3</sup>

<sup>1</sup>University of Goettingen, Dept. of Crop Science, Division of Quality of Plant Products, Germany

<sup>2</sup>Georg-August-University Goettingen, Dept. of Crop Science, Division of Quality of Plant Products, Germany

<sup>3</sup>University of Goettingen, Dept. of Crop Science, Division of Quality of Plant Products, Germany

### Abstract

Vegetable sauces are an important part of the diet and are used as side dish or accompaniment with staple food in Morogoro, Tanzania. They can serve as a good source of micronutrients such as ascorbic acid and provitamin A. However, the composition and preparation of these sauces, which are offered on local markets, is not always known and seems to vary. It is therefore not always possible to assess whether they contribute to a healthy diet. In the present study, local recipes for making vegetable sauce from Morogoro region, Tanzania, were used as basis for preparation of tomato and carrot sauces. The basic ingredients of sauces consisted of either tomatoes or carrots with onion, ginger, garlic, salt and hot pepper (optional). Baobab pulp was added to increase viscosity and acidity of the sauces instead of starch and citric acid as used in local sauces. In addition, peanut paste was added to enhance bioavailability of carotenoids, which are important precursors of vitamin A. Ingredients for making sauce were blended using a kitchen mixer for 2 minutes to obtain the raw sauce. To study the effect of cooking time, they were cooked at  $87\pm 3^{\circ}\text{C}$  for 20, 25, and 30 minutes, respectively and physicochemical properties, ascorbic acid and instrumental colour values ('L', 'a' and 'b' values) were determined. Moisture loss after cooking was higher in sauces from carrot than tomato. The tomato sauce had significantly ( $p < 0.05$ ) higher ascorbic acid retention (69%, 63% and 49%) than carrot sauce (16%, 11.9% and 11%) when cooked for 20, 25 and 30 minutes, respectively. The instrumental colour values indicated that reduction of 'a' values (red pigments) was lower in tomato sauce than carrot sauce but all the formulations exhibited disparate 'b' values (yellow pigments). Generally, the pH of the sauces ranged from 3.3 to 3.7, which is within the recommended range. Cooking time for 25 minutes was promising for retention of ascorbic acid, and red and yellow pigments that reflects total carotenoids content. The studied recipes will be further evaluated for sensory qualities and optimal recipes will be identified based on nutrients retention and consumer acceptance.

**Keywords:** Cooking time, micronutrients, optimal recipe, sauce, sensory, vegetable