

Title: Influence of oil addition in carotenoids bioaccessibility of organic orange fleshed sweet potato

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Sweet potato *Ipomoea batatas* L., carrot variety, with high content of β -carotene, has great potential for providing pro-vitamin A, is an affordable food due low climate requirements for cultivation. Studies have shown important nutritional advantages of vegetables grown under organic management compared to conventional. However, this advantage does not guarantee nutritional absorption of required daily amounts of nutrients. The absorption depends on factors related to individual and food matrix, hence the importance of the bioaccessibility studies. Therefore, this study aims to evaluate the carotenoids profile for a sweet potato variety of organic farming and establish conditions for a carotenoids *in vitro* bioaccessibility assay protocol. The total carotenoid content was obtained by spectrophotometry at 450 nm and the profile was done by HPLC-PDA. The total content was $116.62 \mu\text{g}\cdot\text{g}^{-1}$, being β -carotene the major (>90%). Since Carotenoids are liposoluble, the presence of oil in the food matrix during digestion, is fundamental to their solubilization, emulsion formation and increased bioaccessibility. This study evaluated the effect of adding different amounts of oil in the digestion *in vitro* assay of sweet potatoes. 5 g of crushed fresh samples without and with canola oil added followed simulated digestion steps using physiological conditions. Bioaccessibility of carotenoids found in the micellar fraction of the final product of the digestion of the samples with 0, 0.2, 1, 2 and 3 mL of oil were: 0.79%; 7.29%; 22.68%; 25.77% and 23.33% respectively. From the results obtained, it was observed that increasing the amount of oil added to the test enabled an increase of bioaccessibility of carotenoids. However, excessive amounts of oil lead to emulsion breaking and reduction of the content of the substance in micellar fraction. We conclude that for the conditions of the trial, the optimal amount of oil is 2 mL which obtained the highest value bioaccessibility.

Keywords: bioaccessibility, oil, carotenoids