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Effect of short exposure to sunlight and of heating on carotenoids content of crude palm oil

Dongho Dongmo Fabrice Fabien[1], Ngono Ngane Annie[1], Demasse Mawamba Adélaide[1], Gouado Inocent[1] and Schweigert Florian[2]
[1]University of Douala, Cameroon
[2]University of Potsdam, Germany

Background and Objective: Crude palm oil (CPO) is the richest known source of pro-vitamin A. It is therefore very important to contribute to fight against vitamin A deficiency. Surveys done in Douala town showed that populations use to expose CPO to open air during distribution and heat it when cooking. The objective of this study was to evaluate the effect of short exposure to sunlight and of heating on carotenoids from CPO.

Methodology: Firstly, CPO was exposed to sunlight during 14h. Then, samples were collected and kept at 4°C for analysis of carotenoids content, free fatty acid (FFA) and peroxide value (PV). Secondly, CPO was heated at 50°C, 120°C, 200°C or 400°C for 30, 60 or 120min and samples were cooled down and kept at 4°C until analysis of carotenoids content, FFA and PV. Finally, we studied the effect of heating of CPO in the food matrix (case of maize cake). Thus, maize cake was steamed on gas stove (100±5°C) during exactly 1, 2, 3 or 4h and kept at 4°C until analysis of moisture and carotenoids contents.

Results: The results showed that short exposure to sunlight did not significantly affect carotenoids content, FFA and PV of CPO. However, heating accelerated the formation of peroxides and degradation of carotenoids. Destruction of carotenoids increased with both temperature and duration of exposure to heat. FFA did not significantly change during heating. Likewise, during heating of CPO in the food matrix carotenoids content decreased significantly with cooking time. Conclusions: These results suggest that short exposure to sunlight does not have a significant effect on carotenoids content of CPO. But, its heating (directly or in the food matrix) results to significant degradation of carotenoids.

donghofabrice@yahoo.fr