Levels of Heavy Metals and Their Risk Assessment in Kolanuts (*Cola nitida* Schott & Endl.) Collected from Côte d'Ivoire, West Africa

ABSTRACT

Background : Kolanut represents a significant economic interestfor this country as well as manyAfrican households and public authorities. Despite its obvious importance, the sector of the kolanutis facing a delicate sanitary quality of the marketed product. The majority of the production (90%) of kola is consumed daily fresh by people and could cause a serious health problem for consumersif the toxicity due to heavy metals were proven

Aims : This study aimed to determine the heavy metals levels in kolanuts and estimate the risks ofnuts consumption on population health in Côte d'Ivoire.

Study Design : Samples were collected from farmers, rural collectors, urban stores in districts (Mountains, Comoe, Lagoons, Down-Sassandra) and big storage centers of Anyama and Bouake.

Methodology : Concentrations of 3 heavy metals were measured using Atomic AbsorptionSpectrophotometry. The analysis of lead and cadmium was performed in flame mode (Air /nitrogen), with an AAS type VARIAN SPECTRAA 110 provided the furnace GTA 110. While, theanalysis of mercury was carried out in hydride mode with a SAA system equipped with avaporization unit (VGA 77).

Results : Results showed the presence of the 3 heavy metals in kolanuts samples, withconcentrations ranging from 5.37 µg/kg to 11.21 µg/kg, 17.49 µg/kg to 51.01 µg/kg and 19.99µg/kg to 40.35 µg/kg for lead, cadmium and mercury, respectively. Based on the concentrationsand the daily consumption of kolanuts estimated at 0.6 g/person in Côte d'Ivoire, the intakes values estimated by heavy metals were 4.8.10-3 ± 4.9.10-4 µg/j, 1.3.10-2 ± 9.07.10-4 µg/j and 1.7.10-2 ±1.99.10-3 µg/j for lead, cadmium and mercury, respectively. The exposure daily doses (EDD) are alllower than the toxicological reference values. Thus, the occurrence of a toxic effect from Pb (HQ =1.94.10 -5 <1), Cd (HQ = 1.9.10 -4 <1) and Hg (HQ = 3.4.10 -4 < 1) after Kolanuts consumption isvery unlikely since the HQ are all less than 1.

Conclusion : Consumption of kolanuts from Côte d'Ivoire would not present any health risk for the consumer.