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## Population Structure of *Garcinia kola* Heckel in Central Region of Cameroon

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### Abstract

*Garcinia kola* is a multipurpose fruit tree species indigenous to West African communities, where it is of significant ethnomedicinal, cultural and economic importance. Faced with the threat of declining population numbers, the species was selected for conservation and participatory domestication programmes however, a lack of adequate information on genetic diversity is widely reported as a limiting factor in both processes. The aim of this study was to assess the genetic diversity of 96 *G. kola* individuals from eight existing population groups in the Central region of Cameroon using Amplified Fragment Polymorphism (AFLP) markers. A total of 1176 fragments were amplified using four primer combinations with 98.6 % polymorphism at the species level and a mean number of 261.9 fragments per individual. The computed values for Nei's gene diversity within populations ( $H_j$ ), Total gene diversity ( $H_t$ ), and the Wright's fixation index ( $F_{ST}$ ) were 0.1894, 0.1922 and 0.0145 respectively. The obtained results revealed a higher genetic diversity within the assessed populations than among them. Bayesian analysis of sampling groups revealed the existence of two differentiable but admixed genetic clusters, implying a weak population structuring. Attempts to assess for correspondence between clustering and geographic distances revealed no clear patterns. The study revealed that AFLP markers are a useful tool for assessing the genetic diversity of *G. kola*. Results suggest possible human-mediated gene flow events, potentially attributed to the selection of kernels for trade or natural selection through the adaptation of the species to local environmental. This study may open the door for advancing participatory tree domestication programme and conservations programmes within the study area. However, it is recommended that initiatives be undertaken to safeguard the existing genetic diversity such as the use of gene banks, sustainable utilisation of genetic diversity in PTD or the protection of important individuals within their stands.

**Keywords:** AFLP marker, AFTPs, agroforestry, bitter kola, genetic diversity, provenance, tree domestication