

## Identification of Specific Markers Linked to Regional Differentiation of *Warburgia ugandensis*

Onyango Noel Ochieng<sup>1</sup>, Alice Muchugi<sup>1</sup>, Edward Muge<sup>2</sup>, Bonaventure Omondi Aman<sup>3</sup>  
and Ramni Jamnadass<sup>4</sup>

<sup>1</sup>*Department of Biochemistry and Biotechnology, Kenyatta University, P.O. Box 43844,  
Nairobi, Kenya*

<sup>2</sup>*Department of Biochemistry, University of Nairobi, P. O. Box 30197- 00100, Nairobi, Kenya*

<sup>3</sup>*Department of Plant Protection Sciences, Swedish University of Agricultural Sciences,  
P. O. Box 102 SE 230 53, Alnarp, Sweden*

<sup>4</sup>*World Agroforestry Centre (ICRAF), P. O. Box 30677 00100, Nairobi, Kenya*

**KEYWORDS** Random Amplified Polymorphic DNA. Amplified Fragment Length Polymorphism. Basic Local Alignment Search Tool. Multiple Sequence Alignment. Sequence

**ABSTRACT** *Warburgia ugandensis* is an important African medicinal tree. The species population has shown a high genetic differentiation in the Kenya's Rift Valley. Nine populations were analysed by Bulk Segregant Analysis employing Random Amplified Polymorphic DNA marker technique to identify regional differentiation-linked markers within and across Kenyan Rift Valley. Five primers showed putative East and West genetic differentiation. Diagnostic markers were isolated, cloned, sequenced and compared with Genbank sequences using BLAST algorithms. Three, (*WarburgiaIC15E*, *WarburgiaIC55E* and *WarburgiaIC28W*) sequences showed homology to plant and bacterial-like chromosomal sequences with low E-values. Sequence alignment indicated conserved protein domains of plants and bacteria-like sequences. Phylogenetic analysis revealed high rates of genetic distances ( $H'' 0.8$ ) and a low rate of disparity indices of (0), suggesting some evolutionary forces behind demographic differentiation. These imply that genetic differentiation observed might be due to genetic mutants in certain domains of chromosome that may have some implication on genome functionality.