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Application of microsatellite polymorphisms to study the diversity in seed oil content and fatty acid composition in Nigerian sesame (*Sesamum indicum* L.) accessions

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Improving oil yield and a healthy fatty acid profile is a major breeding objective in sesame. In this study, the variability in simple sequence repeat motifs were used to study the diversity in 30 Nigerian sesame accessions in relation to the analyzed variation in oil content and fatty acid composition as a fundamental step towards its genetic improvement. Sesame seed oil content ranged from 40 to 55% (47.65 ± 2.8 %). Palmitic, stearic, oleic, linoleic and α -linolenic acid are the principal fatty acids with unsaturated/saturated fatty acid ratio of 5:1. Linoleic acid (45.65 ± 1.15 %) and α -linolenic acid (0.3 ± 0.04 %) were the most predominant and least fatty acids, respectively. High genetic variability was found among the accessions with the repeat motifs (TC12 - TC25) generated from two highly informative primer pairs clearly differentiating the 30 accessions into eight Groups. The seed oil yield and fatty acid composition shows that sesame oil is highly valuable for industrial purposes and assured human health. The variability in the accessions based on microsatellite markers was closely related to the variation in oil yield and fatty acid composition, which could be potentially beneficial in efforts towards marker assisted selection for these traits.

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