

## **Synthesis of Alkyl Esters from Three Unconventional Sudanese Oils for Their Use as Biodiesel**

A. Mariod,<sup>\*,†</sup> S. Klupsch,<sup>‡</sup> I. H. Hussein,<sup>§</sup> and B. Ondruschka<sup>‡</sup>

*Food Science and Technology Department, College of Agricultural Studies, Sudan UniVersity of Science and Technology, Post Office Box 71, Khartoum North, Sudan, Institute for Technical Chemistry and EnVironmental Chemistry, Friedrich-Schiller UniVersity, Lessingstrasse 12, 07743 Jena, Germany, and National Oil Processing Research Institute (NOPRI), UniVersity of Gezira, Post Office Box 20, Wad Madani, Sudan*

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Biodiesel is a renewable, biodegradable, and nontoxic fuel that can be derived from vegetable oils by transesterification. In this study, *Sclerocarya birrea* oil (SCO), melon bug oil (MBO), and sorghum bug oil (SBO), three long-term stable oils from Sudan, were transesterified using methanol or ethanol in the presence of sulfuric acid; the obtained biodiesel characteristics were studied in accordance with the DIN EN 14214 specifications for biodiesel. Most of the biodiesel characteristics met the DIN specifications (water content, iodine number, phosphorus content). The kinematic viscosity values of all samples were higher than those of biodiesel standard limits. Concerning the oxidative stability, only SCO has an induction period higher than the required limit. It was possible to prepare the methyl and ethyl esters catalyzed by H<sub>2</sub>SO<sub>4</sub> from the three unconventional Sudanese oils. Under the described transesterification conditions, SCO seems more suitable for biodiesel than MBO and SBO.