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PRELIMINARY STUDIES ON PREPARATION OF LUBRICATING GREASES FROM BLEACHED RUBBER SEED OIL

The economic importance of rubber tree (*Hevea brasiliensis*) has traditionally been based on its latex which is collected from the plant by tapping. Vegetable oils have been recently found as important materials in the automobile and aviation industries (Dunn and Perera, 1985). This work is a preliminary attempt for the production of grease from rubber seed oil.

Seeds from three clones (Tjir 1, RRIM 501 and RRIM 601) of *H. brasiliensis* were used for the study. Laboratory grade sodium hydroxide and calcium chloride were employed in the saponification of the soap. Rubber seed oil was extracted using petroleum ether (40 - 60° C) from fresh seeds. Bleaching was carried out with Fuller's earth.

Peroxide value and saponification value were determined by AOCS methods. Viscosity measurements were performed at 25°C using a Brookfield (model LVTCP 115/60) digital viscometer. Turbidity measurements were performed by AOCS method. Melting point was determined using the Fischer melting point apparatus. The flash and fire points were determined using AOCS methods. Textural measurements were taken using a texturometer (Model TMS 90).

Grease was produced using the method of Ononogbu *et al.* (1991). Three steps were employed namely saponification of the oil using sodium hydroxide, double decomposition of the resulting sodium soap using saturated calcium chloride and production of grease from the calcium soap by adding excess bleached oil.

Physical and chemical characteristics of bleached rubber seed oil are given in Table 1.

Table 1. **Physical and chemical characteristics of bleached rubber seed oil**

Colour	Golden yellow
Viscosity, c ps	39.5
Turbidity,°C	10
Melting point,°C	45
Flash point,°C	250-260
Fire point, °C	340-350
Peroxide value, mEq/kg	1.8
Saponification value	192

The viscosity of the bleached rubber seed oil was found to be 39.50 cps. This is different from those obtained by Rescoria and Charghan (1936) and Ibemesi (1992) on soybean, peanut and olive oils whose fatty acid profile is comparable to that of rubber seed oil (Uzu *et al.*, 1986). However, the flash and fire points were found to be comparable to those reported by Detwiller and Markley (1970) on soybean and peanut oils.

The saponification and peroxide values obtained in this work compare well with those reported by Aigbodion (1991) and Uzu *et al.* (1986). The low viscosity reported for rubber seed oil in this work indicates lower degree of intermolecular interactions. Rubber seed oil comprises short chain length fatty acids. Viscosity increases, with the average chain length of the fatty