

EFFECT OF FERMENTATION OF SEED ON THE CHEMICAL PROPERTIES AND FATTY ACID PROFILE OF RUBBER SEED OIL

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Rubber (*Hevea brasiliensis*) seeds were boiled and fermented with mixed culture and pure culture of *Bacillus licheniformis*. Following fermentation, saponification value of the oil increased while its iodine value, acid value and unsaponifiable matter decreased; per cent yield of total lipid decreased while cyanide was undetectable. Percentage content of palmitic, stearic and oleic acids increased while that of linoleic and linolenic acids decreased. Behenic and myristic acids were undetectable after fermentation. The implication of these fermentative modifications for the improvement of rubber seed and its oil for human consumption, agricultural and industrial use are discussed.

Key words : *Bacillus licheniformis*, Fatty acids, Fermentation, *Hevea brasiliensis*, Rubber seed oil.

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INTRODUCTION

Rubber (*Hevea brasiliensis*) grown widely in the humid belts of the tropics is traditionally the source of rubber latex (Udomsakdhi *et al.*, 1974). Recently there has been increased interest in rubber seed oil (RSO) for human consumption and industrial uses (Narahari and Kothandaraman, 1983) due to the increasing demand of conventional vegetable oils. Rubber seed oil, though classified as edible oil, is generally not used for food except for scanty reports of limited consumption of rubber seed meal in midwestern Nigeria (Uzu *et al.*, 1985). Thus the abundant world production of rubber seed (oil) has little value. In Nigeria, the quantity of seeds spoiled in the field by rotting or eaten by rodents is estimated to be over 13 million kg annually (Enabor, 1985). Chemical analysis of rubber seed kernel shows that it contains

42-44 per cent oil, 22.3 per cent protein and 23.4 per cent carbohydrates (Udomsakdhi *et al.*, 1974; Narahari and Kothandaraman, 1983). RSO shows a specific gravity of 0.9185, refractive index 1.4, iodine value 145.8, saponification value 192.2 and free fatty acid 15.45. Chemically, it contains 20 per cent saturated fatty acid, 23 per cent oleic-, 32.5 per cent linoleic- and 22.5 per cent linolenic acid (Udomsakdhi *et al.*, 1974). The restricted consumption of RSO is attributed to the toxicity associated with the cyanogenic glycoside present in rubber seed (Montgomery, 1969), as well as the varnish flavour of oil (Udomsakdhi *et al.*, 1974).

Though castor oil obtained from seeds of *Ricinus communis*, another member of the Euphorbiaceae family, is also toxic (Anosike and Ekwuatu, 1980), fermentation has been used to render it edible and highly desirable (Odunfa, 1981). Fermentative modification