

Screening And Isolation of Lactic Acid Bacteria from the Gut of African Palm Weevil (*Oryctes Rhinoceros*) Larvae as Starter Culture in Yoghurt Production

***Abbas-Adediran and H. Madukosiri, H. C.**

Niger Delta University, Wilberforce Island Amassoma, Bayelsa State, Nigeria

Corresponding Author Email: aalifare@gmail.com

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ABSTRACT:

African palm weevil larvae (*Oryctes rhinoceros*) are widely consumed in the South-South region of Nigeria and valued as a nutritious traditional food. The larvae, naturally distributed across tropical regions, are mostly harvested from the wild. This study investigated the presence and viability of lactic acid bacteria (LAB) in the gut microbiota of the larvae as a potential alternative starter culture for yoghurt production. Larvae were aseptically collected from Odi community, dissected, and cultured using the pour plate technique on de Man Rogosa Sharpe (MRS) agar. Incubated cultures were purified by streaking, and isolates were identified microscopically based on cell morphology, catalase reaction, and Analytical Bacterial Identification System (ABIS) Map. The isolate was used to ferment milk, and key indicators such as pH, titratable acidity, and organoleptic properties were assessed. The LAB isolate from the larvae showed no effective fermentation activity, maintaining a near-neutral pH (6.8), low titratable acidity (72%), fresh-milk odor, and absence of curd formation. In contrast, the standard yoghurt starter culture produced the expected uniform gel structure, characteristic yoghurt aroma, higher titratable acidity (96–120%), and pH 4.5, confirming its functional suitability for yoghurt production. The findings demonstrate that the LAB isolate from *Oryctes rhinoceros* larvae is not appropriate as a yoghurt starter culture due to its inability to meet essential fermentation, safety, and physicochemical requirements. Further research should include molecular identification and screening for functional LAB to determine whether safe, technologically relevant strains exist within the larvae microbiome.

KEY WORDS: Yoghurt, Lactic acid bacteria, Starter culture, Palm weevil larvae, *Oryctes rhinoceros*, Food safety.

INTRODUCTION

Yoghurt is a very nutritious food and its continued consumption in the Western World owes much to the development of its health food image (Early, 1998). The methods of production of yoghurt have, in essence, changed little over the years and although there have been some refinements, especially in relation to lactic acid bacteria, that bring about the fermentation. Yoghurt is produced in

the form of a highly viscous liquid. Yoghurt is also produced in a drinking form and can be frozen or blended with other ingredients to create, for example, mousse type products, sorbet, yoghurt ice-cream or other forms of dairy dessert (Early, 1998). The initial popularity of yoghurt in Western Europe owed much to the work of the Russian and Metchnikoff, 1908 he attributed the good health and longevity of Balkan peasants to the effects of certain bacteria in the yoghurt they consumed. He postulated the theory that prolongation of life would follow ingestion of a lactic acid bacterium named as