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Assessment of the nutritional and growth enhancement quality of some brands of milk on selected bacteria.

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ABSTRACT

Studies were carried out on the nutritional and growth enhancement quality of four brands of milk selected based on consumer preference. These are 'Cowbell', 'Jago', 'Milcow' and 'Peak' milk powder. Nutritional facts of the four brands shows that all of them have similar composition except 'Cowbell' that contains vegetable fat 26%. The protein composition of the four brands were in the range (25-26%), lactose (35-38%) and mineral salts (5.5-6.0%). Various types of milk media were composed using the stipulated milk and different protein sources which include 'Daddawa'(Locust beans), Yeast Powder, Yeast extract and Peptone. Growth enhancement quality of the composed media was assessed using three bacteria: *Staphylococcus aureus*, *Escherichia coli* and *Lactobacillus plantarum* while Imported Milk Agar (Sigma-Aldrich, Germany) was used as the Control. Nutritional quality of the milk media were assessed based on proximate and elemental analysis of the composed media. Obtained result showed that there was no significant difference in the moisture content, carbohydrate, crude fat, protein, crude fibre and ash content of the locally compounded milk agar (LCMA) and that of the Imported Milk Agar (IMA). There was also no significant difference in the elemental composition such as sulphur, phosphorus, potassium, iron and magnesium in the LCMA and that of the IMA. Generally, *Staphylococcus aureus* showed the least growth and development on all composed media ($3.1 \times 10^4 - 1.3 \times 10^5$ cfu/ml) while the highest viable counts were obtained in *Lactobacillus plantarum* ($1.0 \times 10^5 - 2.0 \times 10^6$ cfu/ml) on the various milk media. There was a significant difference between total viable counts of *Staphylococcus aureus* on the LCMA and IMA (Control). However, there was no significant difference in the total viable counts of *Escherichia coli* and *Lactobacillus plantarum* on the locally compounded media and control. Media containing 'Cowbell' milk powder had the highest total viable counts for the three isolates (1.3×10^5 cfu/ml, 1.8×10^6 cfu/ml and 2.0×10^6 cfu/ml) for *Staphylococcus aureus*, *Escherichia coli* and *Lactobacillus plantarum* respectively. It was observed that 'Cowbell' milk powder in conjunction with Daddawa (locust bean) and edible yeast powder is the best combination when compounding Milk agar using our local resources.