

## **In vitro Analysis of the Effect of Supplementation Oils on Conjugated Linoleic Acid Production by *Butyrivibrio Fibrisolvens***

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**Abstract :** Some micronutrients in food (milk and meat), called 'functional food components' exert beneficial effects other than their routine nutrient function and conjugated linoleic acid (CLA) is an unsaturated fatty acid of ruminant origin, an example of this category. However, recently the fear of hypercholesterolemia due to saturated fats has led to the avoidance of dietary fat especially of animal origin despite its advantages such as lowering blood cholesterol, immuno-modulation and anticarcinogenic property due to the presence of CLA. The dietary increase of linoleic acid (LA) and linolenic acid (LNA) is one of the feeding strategies for increasing the CLA concentration in milk. *Butyrivibrio fibrisolvens* is the one potential rumen bacteria, which has high potential to isomerize LA to CLA. The study was conducted to screen the different oils for CLA production, selected based on their LA concentration. *Butyrivibrio fibrisolvens* culture (strain 49, MZ3, 30/10) were isolated from the rumen liquor of fistulated Buffalo (age  $\approx$  3 years; weight  $\approx$  250 kg) were used in in-vitro experiments, further work was carried out with three oils viz., sunflower, mustard and soybean oil at different concentration (0.05, 0.1, 0.15, 0.2, 0.25 and 0.3 g/L of media) to study the growth of bacteria and CLA production at different incubation period (0, 8, 12, 18, 24, 48, 72 h). In the present study, growth of the bacteria was decreased linearly with increase in concentration of three oils. However, highest decrease in growth was recorded at the concentration of 0.30 g of three oils per litre of the media. Highest CLA production was 51.96, 42.08 and 25.60  $\mu\text{g/ml}$  at 0.25 g and it decreased to 48.19, 39.35 and 23.41  $\mu\text{g/ml}$  at 0.3 g supplementation of sunflower, soybean, and mustard oil per litre of the media, respectively at 18 h incubation period. The present study indicates the *Butyrivibrio fibrisolvens* bacteria involves in the biohydrogenation process, and LA rich sunflower meal can be used to improve the CLA production in rumen and thereby increasing the CLA concentration of milk.

**Keywords :** *Butyrivibrio fibrisolvens*, CLA, fatty acids, sunflower oil

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