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Utilization of Lactic Acid Bacteria in Food Processing

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This address introduces some research work on the utilization of lactic acid bacteria in Food Processing, especially in Dairy Processing. For young mammals Including human infants, milk Is the first food. and one of the most important food for human beings.

Lactic acid bacteria are a group of Gram-positive cocci and rods with common physiological and ecological characteristics. Lactic acid bacteria include members of the genera *Streptococcus*, *Enterococcus*(formerly *Strptococcus*), *Lactococcus*(formarly *Streptococcus*), *Pediococcus*, *Leuconostoc*, *Lactobacillus* and *Bifidobacterium*. The genus *Bifidobacterium* is obligately anaerobic, and, it is found on the mucous membranes of humans and animals. The other genera are commonly found in naturally fermented foodssuch as dairy products and product of plant origin. Several species of lactic acid bacteria are used commercially for the production of fermented dairy and meat products, as well as other foods. These bacteria utilize carbohydrates as energy source and produce lactic acid either as the sole product of metabolism(homolactic fermentation as the major end product(hetero lactic fermentation).

This address focuses on the association of lactic acid bacteria with dairy product and their contributions to food safely, food quality and human health.

Roles of starter lactic cultures

- (1) Lactose fermentation; lactic acid production
- (2) Citrate fermentation ; flavor (diacetyl/acetoin) production
- (3) Proteolysis: Peptide and free amino acid production
- (4) Probiotic properties such as antimicrobial and therapeutic activities

Screening methods to get a high potential strain of lactic acid bacteria as starter culture

- (1) Selection of useful lactic culture from naturally fermented milk and product
 - a) Maziwa lala, traditionally fermented milk in Kenya
 - b) Acid-set cheese, indigenous cheese in Inner Mongolia
- (2) Selection of useful lactic culture by using gene transfer technology
 - a) Test organism used: *Lactococcus lactis* subsp. *lactis* biovar *diacetylactis* strain N-7
 - b) Functional properties of plasmid DNAs
 - 1) Isolation of plasmid-deficient mutants using acridine orange as curing agent
 - 2) Plasmid profile of lactose-negative, citrate-negative
 - c) Isolation of new strains using conjugal transfer method