Production by auxotrophic mutants

Large amounts of lysine can be obtained simply by cutting off the branches leading to other amino acids. Thus, a mutant of *Brevibacterium flavum* that was defective in the branches leading to the methionine and to threonine and isoleucine yield of 34 g lysine per liter of medium. It was shown that effective feedback inhibition of aspartate kinase requires both lysine and threonine at 1 mM concentration. Because of this lysine-producing auxotrophic mutants must be fed methionine, threonine and isoleucine continuously and in carefully measured amount.

The most potent microorganisms to overproduce lysine are **mutants** derived from *C. glutamicum*. Mainly auxotrophic and regulatory mutants have been developed.

Another attractive approach is the development of thermophilic strains. A mutant of *C. thermoaminogenes* was protected which is capable of growing at a temperature higher than 40oC and accumulating L-lysine.

LPM

The composition of formulation comprises of Betaine(5%), Isobuteric acid(0.25%), Protease(7.5%), Choline Chloride (5%) and the following live microbial cultures with a TVC of 6,000 Million CFU/g. and the product is formulated in Ragi Flour as carrier.

B subtilis,	*Trichoderma reessi,*
Corynebacterium glutamicum,	*Cellulomonas uda,*
Alcaligenes faecalis,	*Conidiobolus coronatus,*
Pencilium roquefortii,	*A. oryzae,*
A. niger	*S. cerevisiae*

COSTING WITHOUT RAGI FLOUR:

Betaine(5%), 5 Kg @ Rs 365/-	1825
Isobuteric acid(0.25%), @1650/-	412.50
Protease(7.5%), 7.5 kg @300/-	2250
Choline Chloride (5%) 10 kg 50% @70/-	700
Microbes 82.25 Kg (7300 M CFU/g):	22500
Process costs	400
Packing Costs 100g	1400
Forwarding Expenses	400
Total	29887.00

Or say Rs 300/- Per kg

Label cost and redistribution and selling expenditure are at your end

100 g costs Rs 30/- equivalent to 400 g L Lysine, which costs about Rs 54/- @ 135/- per Kg.

METHIONINE SECRETING DFM

Bacillus subtilis.
Corynebacterium glutamicum,
Escherichia coli,
Lactobacillus plantarum,
Leuconostoc sp.,
Saccharomyces sake

Lactobacillus spp. were the highest secreters of **Methionine**, followed in that order by *Leuconostoc* sp.*, Corynebacterium* sp. *and Bacillus* sp.

In survey studies on microbial accumulation of S-adenosyl-L-methionine (AdoMet), various yeasts were found to accumulate AdoMet intracellularly to a high concentration when they were grown in medium containing L-methionine. A group of sake yeasts (*Saccharomyces sake*) exhibited especially high accumulation. Of these yeasts, *S. sake* Kyokai No. 6 (K-6), which exhibited the highest accumulation, produced 12.6 µmol (5.03 mg) of AdoMet/ml broth. Almost all AdoMet produced was accumulated in cells, extracellular accumulation of AdoMet being very low. The maximum content of AdoMet of cells was 5.31 µmol (205 mg)/g dry cells. This was the highest value that had been reported. Methionine adenosyltransferase (EC 2.5.1.6) activity was significantly higher in this yeast compared to those in other yeasts tested. Ultraviolet photomicrographic studies on *S. sake* K-6 suggested that AdoMet was gradually accumulated in vacuoles with the passage of cultivation time.

It has recently been shown that the *Brevibacterium-Corynebacterium* group produces specific transporters that function solely to excrete glutamic acid as well as certain other amino acids that they also overproduce. These transporters are probably useful when the cytoplasm becomes flooded with amino acid.

Production of amino acids by regulatory mutants of branched pathways
Members of the aspartate family of amino acid-lysine, methionine, threonine and isoleucine are produced by one branched pathway, those of the pyruvate family. The regulation of these pathways is much more complex. In *E.coli*, each product inhibits
and/or represses the first enzyme of the common pathways, aspartate kinase. However, there are numerous microorganisms that have much simpler regulation. The major regulation in these organisms is inhibition the first common enzyme by one or a few
end product. This type of regulatory mechanism was found in the soil bacterium *Brevibacterium flavum.*

M P M CONTAINS

The composition of formulation comprises of Betaine(5%), Isobuteric acid(0.75%), Protease(7.5%), Choline Chloride (5%), Nutrient medium (5%) and the following live microbial cultures with a TVC of 6,000 Million CFU/g. and the product is formulated in Ragi Flour as carrier.

Bacillus subtilis.
Corynebacterium glutamicum,
Lactobacillus plantarum,
Leuconostoc sp.,
Saccharomyces sake

A. niger
A. oryzae,
Alcaligenes faecalis,

Bacillus subtilis.
Cellulomonas uda,
Conidiobolus coronatus,
Corynebacterium glutamicum,
Lactobacillus plantarum,
Leuconostoc sp.,
Pencilium roquefortii,
S. cerevisiae
Saccharomyces sake
Trichoderma reessi,