Dynamics of Agricultural Biotechnology

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and Ni2+ were poor substitutes. This enzyme also required these divalent cations to stabilize its structure and function under extreme conditions such as high and low temperatures and urea denaturation. The glutamate analog L-methionine-D,L- sulfoximine, inactivated the enzyme, whereas the GOGAT inhibitor, azaserine, had no effect on the enzyme activity.

123 GOYAL, DINESH. 1992. **A simplified method for screening and characterization of plasmid DNA in cyanobacteria**. *Journal of Microbiological Methods*, 15: 1, 7-15; 29 ref.

A simplified method of studying plasmid distribution in cyanobacteria involves direct agarose gel electrophoresis of heat-treated, ethanol-precipitated, plasmid preparations from the cleared lysates without ultracentrifugation. The method is sensitive and can be used to determine the number of different plasmid species and their molecular weights from the agarose gel patterns. The results compare well with those obtained by the CsCl-EtBr equilibrium density centrifugation technique.

124 TREHAN, K; SINHA, U. 1982. **DNA-mediated transformation in *Nostoc muscorum*, a nitrogen-fixing cyanobacterium**. *Australian Journal of Biological Sciences*, 35: 5, 573-577; 11 ref., 4 tab.

Genetic transformation of an auxotrophic valine-requiring marker and a marker with resistance to p-fluorophenylalanine has been demonstrated in *Nostoc muscorum*. Transformation is primarily mediated by DNA and is insensitive to ribonuclease and proteinase. The kinetics of the frequency of transformation, which is dependent on the concentration of DNA, suggests a saturation phase. Transformants, though devoid of heterocysts, are able to grow in a medium lacking a combined nitrogen source.

125 VENKATARAMAN, GS. 1985. **Molecular biology and biotechnology of cyanobacterial nitrogen fixation**. *Current Science*, 54: 11, 493-498; 68 ref.

ALGAE, *SPIRULINA PLATENSIS*

126 FATMA, T. 1990. **Effect of culture filtrate on growth of *Spirulina platensis***. *Current Science*, 59: 16, 797-798; 3 ref.

Seven levels of Spirulina culture filtrate were added to cell cultures of *S. platensis*. From the plots of absorbance against time it is deduced that the culture filtrate contains extracellular growth-stimulatory factors.

BACTERIOLOGY

127 BATISH, VK; GROVER, S; NEELAKANTAN, S. 1992. **Genetic improvement of lactobacilli and their application in food processing**. *Microbiologie, Aliments, Nutrition*, 10: 1, 1-9; 121 ref.

A review of recent developments in the genetic improvement of lactobacilli is presented under the headings: Plasmid biology of lactobacilli; Gene transfer in lactobacilli; Development of cloning vectors; Molecular cloning of *Lactobacillus* genes; and Future prospects for strain improvement. Current and future applications of lactobacilli in dairy & food industries are also discussed.

128 DAVID, BP; PURUSHOTHAMAN, V; VENKATESAN, RA. 1993. **Comparison of molecular weight estimation techniques: bacterial plasmid DNA**. *Indian Journal of Animal Scinces*, 63: 11, 1146-1151.

129 DHARMSTHITI, S; KRISHNAPILLAI, V. 1993. **DNA sequence conservation at the gene level in a conserved chromosomal segment in two *Pseudomonas species***. *Journal of Genetics*, 72: 1, 1-14.

130 GANDHI, DN; NAMBUDRIPAD, VKN. 1981. **Antagonistic effect of cell free culture filtrate and isolation of antibiotic from *Lactobacillus acidophilus***. *Indian Journal of Dairy Science*, 34: 1, 98-101; 11 ref.

Sterilized skim milk was inoculated with *Lactobacillus acidophilus* R and incubated at 39°C for 24 h. The culture was then centrifuged and the supernatant Seitz filtered. Antibacterial activity was extracted from the filtrate with methanol and acetone followed by Sephadex G-25 gel filtration. The extract inhibited growth of *Escherichia coli*, *Micrococcus flavus*, *Staphylococcus aureus* and *Salmonella weltevreden*. The antibacterial activity was stable at low pH and resistant to heating at 100°C for 20 min; it can be stored at -25°C for 6 months without loss of activity.

131 GARG, SK; MITAL, BK. 1992. **Genetics of antagonistic action and drug resistance in *Lactobacillus acidophilus***. *World Journal of Microbiology and Biotechnology*, 8: 2, 92-97; 70 ref.

Lactobacillus acidophilus has been recommended as a dietary adjunct because of its antagonistic action toward intestinal pathogens, and anti-carcinogenic and hypocholesterolaemic activities. Many *L. acidophilus* strains harbour plasmids and such strains generally produce bacteriocin(s). Resistance to antibiotics has also been shown to be linked with plasmids. Gene transfer and