Influence of Garlic and Red Pepper on the Microflora of Kajami Shik-hae

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Kajami Shik-hae processing consists of the fermentation of low salted Kajami (6% NaCl maximum) coated with a vegetable mixture, composed with cooked millet, red pepper, garlic and ginger. Lactic bacteria are the main component of the microflora. In order to determine their eventual selective role on the microflora the antimicrobial activity of garlic and red pepper was tested with some strain of bacteria and molds isolated from Shik-hae and Shik-hae raw materials. And the influence of their concentration in Kajami Shik-hae on the microflora was also checked. At the concentration of 10% garlic have no inhibitory activity against lactic bacteria but on strains of *Bacillus, Micrococcus* and *Aspergillus niger.* At the concentration of 20% red pepper showed a slight inhibitory activity on two strains of Bacillus. These results shows that red pepper and garlic are not only flavoring ingredients but they might play an important role in the control of the microflora growth and composition during Kajami Shik-hae fermentation.

Identification of the Gene Products Responsible for F Plasmid Partitioning

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DNA subfragments, sopA, sopB, and sopC supporting stable maintenance of an *oriC* plasmid, were derived from mini-F plasmid DNA (*EcoRI* restriction fragment, f5) after digestion with restriction endonucleases, and cloned in vector plasmid pBR322. The recombinant plasmid obtained were introduced into *E. coli* KY7231 and *E. coli* CSR603, and proteins specified by the mini-F fragments were analysed by SDS-polyacrylamide gel electrophoresis. Two proteins encoded by the F fragments were detected, having molecular weights of 41,000 and 37.000

The sopA protein (41K) encoded by a plasmid pXX288 was observed in the cytoplasm, whereas the sopB protein (37K) encoded by a plasmid pXX157 was in the membrane fraction. There was no novel protein band detected in the cell with a plasmid pXX300, which contained sopC fragment. Gene products of a plasmid pXX167, which is comprised of sopA, sopB, and sopC, were not detectable.

Fluorography after one and two dimensional gel electrophoresis of the lysates showed that these two proteins were overproduced in the cells which were allowed to incorporate radioactive amino acid after plasmid amplification by chloramphenicol treatment. The isoelectric points of the sopA and sopB proteins were 6.6 and 7.0, respectively.

The sopA protein was precipitated at the concentration of 30 to 60% ammonium sulfate. Most of the sopB protein was solubilized from the crude membrane by treatment with Sarkosyl, which suggested that the protein locates in the inner membrane.

The sedimentation profile of the crude membrane fraction showed a little difference according to culture media, and the sopB protein was existed in all fractions of the inner membrane.

It was found the fact that the DNA of plasmids pXX157, pXX300, and pXX67 bind to the inner membrane fraction.