F331

Increase in the Rate of Chemical Mutagenesis in Microorganisms by Electric Shock

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The feasibility of the use of electric shock to improve the rate of chemical mutagenesis in microorganisms was tested. The spores of *Streptomyces coelicolor* was suspended in 1 mg/ml of *N*-methyl-*N'*-nitro-*N*-nitrosoguanidine(NTG) and at the same time the suspension was subjected to electric shock (AC 38 volt) for various time intervals. The survival rate of the spore decreased two times after 60 ~ 90 min of the treatments and the formation rate of auxotroph of the spore increased twice after 120 min of the treatments. The improvement of the NTG mutagenesis rate by electric shock was also observed in haploid and polyploid yeast cells belonging to genus *Saccharomyces*.

F332

Interaction of Ribose-Binding Protein with the Membrane Permease

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Ribose-binding protein(RBP) of *E.coli* has dual functions in ribose transport through ribose permease and in ribose chemotaxis through interaction with chemoreceptor Trg. We previously isolated mutant RBPs that have defect in transport while the taxis is normal. The mutations were found in one of the two domains of RBP. Ribose permease, an ABC(ATP-binding cassette) transporter, in the cytoplasmic membrane is composed of *rbsD, rbsA, and rbsC* proteins. We isolated suppressors mapped in the permease gene for the transport mutants by localized mutagenesis. The permease suppressors restored ribose transport and swarm phenotype in the presence of mutant RBP. Allele specificity was observed between the suppressors and the mutations of RBP, suggesting that there exist a specific interaction between the permease components and the domains of RBP.