ABSTRACT

This research work is concerned with the isolation, screening and identification of "***Corynebacterium glutamicum***" species for the biosynthesis of L-lysine by immobilized fermentation in shake flasks. Twenty bacterial cultures were isolated from local habitats. Of all the isolates tested bacterial sp. *G.C.U. 16* was found to be the best producer of L-lysine and was identified as *C.glutamicum G.C.U 16*. The experiments conducted on these bacterial cells were done in shake flasks after immobilizing the bacterial cells in Calcium Alginate beads. Molasses Medium was used for all of this study. Physical as well as chemical parameters were optimized for maximum L-lysine production. It was found that molasses (a cheap carbon source) as compared to other carbon sources gave the most L-lysine production when used in a quantity (15%) that contains 8% sugars in that medium. Nitrogen sources were tested and the best nitrogen source was Ammonium Sulphate which resulted in maximum L-lysine production when present at 4% concentration. Physical parameters such as pH (7.4), temperature (30°C), Inoculum size (10%), Aeration (25ml medium in 250 ml flask), Agitation (150 rpm) were also optimized.

Mutants were derived by employing U.V Rays and using *N*-methyl-*N*-nitro-*N*-nitrosoguanidine (NG). The most potent mutant was *C.glutamicum G.C.U.M 18* an auxotroph of homoserine produced as a result of U.V irradiation. The Maximum L-lysine producing mutant was studied for its kinetics parameters as well. The effect of penicillin on the excretion of L-lysine into the medium was tested also.