GENETIC IMPROVEMENT OF SOME AMINO ACID PRODUCTION FROM *CORYNEBACTERIUM GLUTAMICUM*

By

HAMIES BAHER MOHAMED NABIL
B.Sc. of Science (Biotechnology/ Biomolecular Chemistry), Cairo Univ., 2012

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ABSTRACT

Hamies Baher Mohamed: Genetic Improvement of Some Amino Acid Production from Corynebacterium Glutamicum. Unpublished M. Sc. Thesis, Department of Genetics, Faculty of Agriculture, Ain Shams University, 2018

L-Tryptophan, is one of the 9 essential amino acids of humans which cannot be synthesized internally by him, microbial production is the main source to obtain tryptophan for commercial uses. Typical microorganisms used for tryptophan production are *Escherichia coli* and *Corynebacterium glutamicum*. In this study, random mutations are induced on two strains of *C. glutamicum.* to increase tryptophan production, the produced tryptophan measured by bioassay using tryptophan auxotroph *E. coli.* (JW1254-2) strain, the mutations are performed using UV radiation. To detect and compare the difference between the parent strains and the genetically mutated strains, two molecular markers start codon targeted polymorphism (SCoT) and Inter-simple sequence repeats (ISSR) were used. Tryptophan remarkably increased after *C. glutamicum* mutation from one mutated strain to reach 278.4µg/ml (1259.4%). The discrimination between the two original strains and their mutants could be detected by ISSR and SCoT techniques. The results indicated importance of induction of mutation by UV radiation for increasing the productivity of the bacteria to tryptophan.

Key Words: *Corynebacterium glutamicum*; Tryptophan; Gene mutation; SCoT; ISSR.

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