PREFACE

L-Methionine is an essential sulfur containing amino acid and cannot be synthesized internally in humans and mammals and it should be given from external source. Some plant proteins are frequently deficient in methionine. Dietary deficiency and defective metabolism of methionine in humans leads to various diseases. Methionine is an important feed additive in animal nutrition, is however still synthesized by chemical process which requires hazardous raw materials. Due to hazardous materials required for chemical synthesis of methionine, many countries banned usage of synthetic methionine in animal feeding and also indications that L-methionine has a better bioavailability for breeding poultry, piglet and other animals, biotechnological production of L-methionine based on natural resources through submerged fermentation has gained increasing interest in recent years.

In present the work Corynebacterium glutamicum strain is used for production of L-methionine using agricultural products since many amino acids are produced economically by C.glutamicum using fermentation and also this contains less feed regulation when compared to other wild type strains. It represents large market volume for industrial production of amino acids through fermentation over the worldwide annually. The current work carried out on “Studies on production of L-methionine using Corynebacterium glutamicum in fed batch and continuous fermenter”. Earlier, many researchers made efforts to overproduce methionine using batch fermentation or shake flask; unfortunately no fermentation process has become commercialized so far (not more than 5 g/l yield obtained) based on natural resources. In the present study agriculture media has been used to enhance the yield of methionine by using fed batch and continuous fermenter. Fed batch and continuous fermenters have lot of advantages over batch fermentation or shake flask in terms of higher concentrations and productivities of methionine and biomass.

In the current investigation, the effect of fermentation parameters and nutritional parameters on growth and methionine production by C.glutamicum using agricultural products were studied by using one factor at a time method (OFAT). The
medium components influencing the L-Methionine production were identified using Plackett-Burman design. The optimum levels of these variables were determined using RSM based on CCD. The optimized values obtained from RSM and ANN were used to carry out fed-batch and CSTR studies for the production of L-Methionine by *C. glutamicum* using agricultural products as substrates and made comparison of results from fed batch and continuous fermenter.