

**Document Type** : Thesis  
**Document Title** : Biochemical studies on the production of protease by aspergillus oryzae  
دراسات كيميائية حيوية على إنتاج البروتيناز باستخدام *Aspergillus oryzae*

**Document Language** : Arabic

**Abstract** : Protease is an important industrial enzyme, which is used in many applications. Therefore, the objective of this research point is to produce protease tentatively using different local agricultural and dairy by-products such as: date-seeds, potato processing wastes~ rice bran, wheat bran and whey. Carbohydrates, protein, ash, amino acids, and some elements of these agricultural and dairy by-products were determined. The aim of these analyses was to incorporate them separately or in combination into the fermentation medium for the bioformation of protease by *Aspergillus oryzae* NRRL 458. -" The optimal fermentation period for the microbial growth and protease production was 48 h. The fermentative production of protease by *A.oryzae* NRRL 458 is an aerobic fermentation process; therefore, the shaking cultures were better than static ones. Beef extract as organic nitrogen source was better than the organic and inorganic nitrogen source. When peptone was replaced separately by equivalent amounts of: whey, wheat bran and date-seeds. Whey was the best nitrogen source of the other agricultural by-products. Glucose was the best carbon source than mono- and oligo saccharides for the production of protease. When adding separately different concentrations of potato processing wastes, wheat bran, whey and rice bran into the fermentation medium containing date-seeds, potato processing wastes pushed the organism to give high titers for protease production.  $\text{KH}_2\text{PO}_4$  at concentration of 1.5 mg/ml was the best concentration for protease production. The most suitable fermentation medium for the production of protease contained the following ingredients (mg/ml): date-seeds, 182.0; potato processing wastes, 35.0; glucose, 40.0;  $(\text{NH}_4)_2\text{SO}_4$ , 5.0;  $\text{KH}_2\text{PO}_4$ , 1.50;  $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$ , 0.5;  $\text{MnSO}_4 \cdot 4\text{H}_2\text{O}$ , 0.05; and  $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$ , 0.005; in 1 ml of distilled water. Protease was partially purified and dialysed; the dialysed solution contained protease activity 167.2 units/ml. The protein content 1.66 mg/ml. The specific activity was 100.7 units/mg. protease ~~~ 9 fold with an overall yield of about 25.3 %.