

# USING OF IMMOBILIZED NARINGINASE AND PECTINASE TO IMPROVEMENT PROPERTIES OF THE NATURAL JUICE

Mohammed A. Al-Soufi\*

\*Assistant Professor- Market Research and Consumer Protection Center, University of Baghdad - alsoufim@mracpc.uobaghdad.edu.iq.

## ABSTRACT

This research was conducted in the laboratories of the Market Research and Consumer Protection Center, University of Baghdad, the research aimed to use immobilized enzymes to removal bitter and turbidity from natural orange juice with a single step and study the optimal conditions for their work, the results showed that used sodium alginate gel was lead to immobilized 84 and 87% of the original amount of the naringinase and pectinase respectively, the optimum pH of the immobilized naringinase and pectinase was 4, the results showed that both enzymes were stable at pH ranging from 3 to 6 for 30 minutes, the optimum temperature for immobilized naringinase and pectinase was 50°C, it was observed they were stable at 45 and 50°C for 30 minutes respectively, the results of the immobilized naringinase and pectinase storage at 4°C showed that they were keep of its activity for 24 and 27days respectively, determination of the optimum time of immobilized naringinase and pectinase activity showed that they have shown the highest activity at 75 and 60 minutes of reaction respectively, using of immobilized enzymes was lead to increase in the amount of reducing sugars that released from juice to 0.82 mg/ml at 60 minutes of reaction time, using of immobilized enzymes lead to a decrease in the viscosity of the natural juice from 2.3 to be 1.14 cp when 60 minutes of reaction time, the immobilized naringinase was keep of all activity after 6 cycle, while the immobilized pectinase was keep of all activity after 7 cycle.

**Key words:** immobilized enzymes, naringinase, pectinase, sodium alginate gel, natural juice.