Title of the Project: "Clarification of orange juice by pectinase enzyme treatment".

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ABSTRACT

Orange juice is one of the most popular fruit juice products in the world. But juice is a colloidal mixture of both soluble and suspended solids containing low as well as high molecular weight solids. So, different methods have been used to clarify juice such as centrifugation, pectinase enzyme treatment. Pectinase are a group of enzyme that degrades pectin containing substances in to viscosity reduction, less gel formation and high degree of juice concentration. Stabilization of dense natural juice cloud is one of the primary objectives in the processing of juices. This study has been made to compare the effects of commercial pectinase enzyme and crude pectinase from *Aspergillus niger* on orange juice clarification at different incubation time and enzyme concentration as well as the effects of centrifugation and sedimentation on orange juice.

Extracted orange juices were subjected to different enzymatic treatment conditions. The independent variables were the incubation time (20-100mins), incubation temperature 35°C and concentration of enzyme used (0.05-0.2v/v %) 10ml of prepared enzyme concentration were used in 100ml of orange juice sample. The treatment was applied to different time (20, 40, 60, 80, 100mins). Crude enzyme obtained from *Aspergillus niger* was cultured and carried out fermentation process in Smf1 and SmF2. Crude enzyme extracted from *Aspergillus niger* by centrifugation methods. After enzyme has been subjected to the juice then chemical and physical analysis has been done such as pH, clarity, T.S.S, total titratable acidity reducing sugar etc.

There were significant changes in all the treatments. There were remarkable changes in clarity at 470nm at different centrifugation speed as compared to normal juice. But there was no significant change in T.S.S. as well as in pH. Reducing sugar of commercial pectinase treatment was optimum at 20mins incubation time at enzyme 0.05%, 0.1%, 0.15%, 0.2% concentration whereas it was optimum at 80mins of incubation time in case of crude petinase. Regarding T.S.S. it was observed that 100mins incubation time was optimum for both enzyme treatments. But incase of centrifugation and sedimentation, centrifugation methods was acceptable for clarification process.