

## CLARIFY PROCESS OF JUICES FROM LEMON, PERSIMMON FRUITS AND PEACH AT TEMPERATURES CLOSE TO FREEZING

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Knowing the behavior of commercial enzymes that can be used at low temperatures is the great interest for technology improvements in the clarified juice production. The temperature range was studied from 3 to 7° C. In the process of enzyme treatments at low temperatures, the decrease activity of enzymes, yield of products are limiting factors in process efficiency. The synergistic effect of different enzymes on the liquefaction treatment, depectinisation were studied. The results indicated that the combination of cellulase, hemicellulase, pectin-enzymes has a synergistic effect on ratios of the endo- and exo activity of enzymes. The range obtained for the yield of the three clarified juice technologies from lemon, persimmon and peach was 84-87%, 80-90% and 89-92%, respectively in the entire temperature range studied. The enzyme mixtures may have a synergistic effect in increasing the concentration of aromatic compounds and decreasing the acidity. Interaction of the effect of mixed enzymes on the liquefaction treatment and viscosity was significant, and the process efficiency at low temperature was significantly improved only when mixed enzymes were used. A batch and continuous process were tested at low temperatures. The continuous process was the better for semi clarified juice productions, giving 80% conversion of substances, T=40-60%, turbidity=40-150FNU. The batch process was the better for clarified juice productions from juices and pulps of the lemon, peach, persimmon fruits, giving 100% conversion of substances, T=99,2 -100%, turbidity=0-0,5NTU after 80% recovery of enzyme activities. Changes the ratio of the endo- and exo-activity of pectin enzymes during low temperature treatment of juices and pulps increased the quality of clarify juices. These clarify juices characterized mostly by higher content of ascorbic acid, higher sensory score, lower ratios of pectin/gal acid and di-gal acid, lower UV-Vis spectrophotometric absorption and alcoholic index.

**Keywords:** *clarified fruit juice, low temperature, synergistic effect, yield*