

## IMPROVING FOOD SAFETY IN UKRAINE

## TECHNOLOGICAL OPTIMIZATION OF PROGRESSIVE COUNTER-FLOW PRELIMING OF DIFFUSION JUICE

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Preliming of diffusion juice aims for ultimate disposal of soluble nonsugars forming sediments resistant to high alkalinity and basic liming temperatures having normal sedimentation-filtering properties. When diffusion juice is being prelimed, the hydrodynamic structure of flows in the process vessel stands as one of the major indicators significantly affecting the technological aspects of the process. On the basis of a physical model of progressive vertical counter-flow predefecator there was indagated the role of the main and recirculating flows particles retention time in the process vessel. According to the calculated statistical characteristics intensification of the counter-flow in the vertical progressive counter-flow predefecator to more than 300% shall not sustain rational increment curve of pH and juice alkalinity in predefecator sections and shall not provide for efficient preliming process.

Although the fundamental question remains outstanding: how does the variance in juice alkalinity in the process vessel sections with performance of the applicable internal recycling influences qualitative indicator of purified juice and final technological characteristics of prelimed juice, which, unfortunately, was not found in the works of Brigel-Mueller, Navo and other researchers. There was performed the study of technological optimization of preliming on a physical model of progressive vertical counter-flow predefecator defining effective final pH and and prelimed juice alkalinity values as well as rational curve of alkalinity and pH juice increase according to the sections with the corresponding value of alkaline juice recycling in predefecation process vessel. Technological studies of the effect of value variance of internal alkaline juice recycle in the process vessel on the juice quality indicators showed that the optimal value of the counter-flow is 200%.

For the purpose of determination of the degree of proteins coagulation in vertical counter flowing preliming unit macrokinetics model was being developed

**KEY WORDS:** hydrodynamic structure, progressive counter-flow preliming, recycling value, coagulation, sedimentation