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ADSORPTIVE RECOVERY OF PHENOLICS FROM APPLE JUICE via BATCH AND FIXED BED COLUMN

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ADSORPTIVE RECOVERY OF PHENOLICS FROM APPLE JUICE via BATCH AND FIXED BED COLUMN

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Running Title: Adsorptive Recovery of Apple Phenolics via Polymeric Resin

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Abstract

Apple juice contains many phenolic compounds, including flavonols, flavanols, anthocyanins, hydroxycinnamic acids, and dihydrochalcones, with many reported health benefits. Patulin is the main toxic microbiological contaminant associated with apple products. In the present study, adsorption of phenolic compounds from apple juice concentrate onto polymeric resin was investigated with the goal of recovering antioxidant components. Simultaneous adsorption risk of the contaminant patulin with the phenolics was also evaluated. The adsorption kinetics was studied in batch experiments. Three kinetic models, Thomas, Adams–Bohart, and Yoon–Nelson, were applied to experimental data to predict dynamic behaviour of fixed bed column using nonlinear regression, and thus to determine the characteristic parameters that are useful for process design.

Keywords: apple juice, phenolic compounds, resin adsorption, patulin, kinetic modelling