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DETERMINATION OF BENZYL BUTYL AND DI-N-OCTYL PHTHALATE FROM MATRIX OF MUSHY PEACH AND APPLE JUICE BY USING LIQUID-LIQUID EXTRACTION

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The phthalates are di-alkyl or alkyl/aryl esters of 1,2-benzendicarboxylic acid which are widely used in polymeric food packing materials to improve their properties. As they are classified as toxic substances, determination of phthalates content in various food matrices are of great interest. In this research the extraction the benzyl butyl and di-n-octyl phthalate from matrix of mushy peach and apple juice by ethyl acetate, hexane and mixtures of ethyl acetate and hexane in ratio of 2:1 and 1:2 (v/v), were examined. The juice was spiked by the solution of phthalates mixture concentration of 200 µg/ml to made concentrations of each phthalate separately in juice matrix of 1, 5 and 10 µg/ml. To determine the content of phthalates, the high performance liquid chromatograph (HPLC) method with a C₁₈ column was used. For phthalate detection, the solvent mixture of (A) acetonitrile/water (85:15, v/v) and (B) acetonitrile by gradient program and an UV/ViS detector at 225 nm were used. A solution of mixtures of standard of phthalates in the concentration range 3-20 µg/mL, was made by methanol and the calibration curves constructed based on the chromatogram peak area ($r^2 > 0.98$). Results showed that the extraction recovery depended on extragens, phthalate and its concentration. The extraction recoveries for benzyl butyl phthalate were higher than for di-n-octyl phthalate: the best achieved for benzyl butyl phthalate was 68.11% at concentration of 5 µg/ml by mixture of ethyl acetate and hexane in ratio of 1:2 (v/v), and for di-n-octyl phthalate was 15.75% at concentration of 1 µg/ml by mixture of ethyl acetate and hexane in ratio of 1:2 (v/v).

Keywords: Phthalates, Juice, Extraction, HPLC analysis

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