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Development and Validation of HPLC Method on Determination of Acesulfame-K in Jelly Drink Product

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Abstract : Jelly drink was produced from a combination of both natural and synthetic materials, such as acesulfame potassium (acesulfame-K) as synthetic sweetener material. Acesulfame-K content in jelly drink could be determined by High-Performance Liquid Chromatography (HPLC), but this method needed validation due to having a change on the reagent addition step which skips the carrez addition and comparison of mix mobile phase (potassium dihydrogen phosphate and acetonitrile) with ratio from 75:25 to 90:10 to be more efficient and cheap. This study was conducted to evaluate the performance of determination method for acesulfame-K content in the jelly drink by HPLC. The method referred to Deutsches Institut fur Normung European Standard International Organization for Standardization (DIN EN ISO):12856 (1999) about Foodstuffs, Determination of acesulfame-K, aspartame and saccharin. The result of the correlation coefficient value (r) on the linearity test was 0.9987 at concentration range 5-100 mg/L. Detection limit value was 0.9153 ppm, while the quantitation limit value was 1.1932 ppm. The recovery (%) value on accuracy test for sample concentration by spiking 100 mg/L was 102-105%. Relative Standard Deviation (RSD) value for precision and homogenization tests were 2.815% and 4.978%, respectively. Meanwhile, the comparative and stability tests were tstat (0.136) < ttable (2.101) and |μ1-μ2| (1.502) ≤ 0.3×CV Horwitz. Obstinacy test value was tstat < ttable. It can be concluded that the HPLC method for the determination of acesulfame-K in jelly drink product by HPLC has been valid and can be used for analysis with good performance.

Keywords : acesulfame-K, jelly drink, HPLC, validation
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