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Development of HPLC Method for Fraud Determination in Coffee

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Abstract. Coffee is known worldwide due its drink high receptivity, being considered an important commodity. Brazil is one of the largest producers and exporters of coffee beans and processed coffee in the world. In Brazil, cheap raw materials as corn, soybean, rye, barley, wheat and rice are commonly found as fraud in coffee samples. The fraud detection in coffee is generally done by visual analysis, using macro and microscopic techniques, which are very dependents on the analyst experience. So, the objective of this work was to develop a more reliable and accurate method to detect fraud in coffee using HPLC technique. The HPLC method was developed to analyze maltose, 1-kestose, raffinose, nystose, fructofuranosylnystose and stachyose, wich are specific sugars present in the raw materials used as contaminants in coffee samples. The analytical standards used in the development of the method were solubilized with water and acetonitrile. Chromatography was performed on a Waters[®] Alliance 2695 system, with a Waters[®] 410 refraction index detector. The used column was an Agilent[®] Zorbax Carbohydrate (250 x 4.6mm - 5µm). Several compositions of the mobile phase and different flows were tested, and 70% of acetonitrile at 1.0mL/min was the condition that gave the best result. With those chromatographic conditions was possible to obtain at the same chromatogram all the sugars standards with good resolution in a run time of 17 minutes. The next challenge of this developing process is to establish a cleanup procedure to eliminate interferences observed in some of the coffee samples chromatograms.