DETECTION OF RELEASED COMPONENTS FROM HI-PS PACKAGING MATERIAL LOADED WITH IMMERSING SOLUTION BY NIT

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ABSTRACT

COMPOUNDS, SUCH AS RESIDUAL MONONERS, SOLVENTS AND OLIGOMERS, FROM VARIOUS KINDS OF PLASTIC MATERIALS. THEY HAVE CAUSED SEVERE SECURITY PROBLEMS OF FOOD PACKAGING DURING STORAGE AND HEATING. THE RESEARCH FOCUSES ON THE POSSIBILITY OF USING NIRS IN DETECTING COMPOUNDS FROM FOOD CONTAINING PLASTIC VESSELS DURING HEATING AND STORAGE. FOUR DIFFERENT IMMERSING SOLUTIONS (WATER, 15% ALCOHOL, 3% ACETIC ACID, CORN OIL) WERE PACKED WITH HIGH IMPACT POLYSTYRENE. THESE MODELS WERE HEATED IN DIFFERENT TEMPERATURE 50 ,70 ,90 FOR TIME (5,10,20,30 MINUTES) FOLLOWED BY STORED FOR ONE TO SIX MONTHS AND WERE ANALYZED BY THE HEADSPACE GAS CHROMATOGRAPHY (HS-GC) DETECTION AND NIRS SCAN ANALYSIS. THE DATA WERE THEN PROCESSED WITH NIRS STATISTICAL SOFTWARE ANALYSES TO ESTABLISH THE CALIBRATION CURVES AND THEIR PREDICTION ABILITIES WERE EXAMINED. THE RESULTS SHOWED THE CALIBRATION OF WAVELENGTHS THAT USED IN THE CALCULATION WITH EVERY 6 NM, SECOND DERIVATIVE TREATMENT AND STEPWISE BY NIR FOR HIGH IMPACT POLYSTYRENE (HIPS) LOAD WITH WATER FROM DIFFERENT HEATING TREATMENT AND STORAGE TIME. IT COULD GET LESS STANDARD ERROR OF CALIBRATION (SEC), SEC WAS 0.1221, CORRELATION VALUE (R2) WAS 0.9174 AND CORRELATION COEFFICIENT (R) OF CALIBRATION WAS 0.961. THE RPD RATIO OF THE S.D OF THE ORIGINAL DATA TO THE SEP STANDARD ERROR OF PERFORMANCE WAS 4.38. IT HAD GOOD REPRESENT. THE CALIBRATION OF WAVELENGTHS THAT USED IN THE CALCULATION WITH EVERY 8 NM, SECOND DERIVATIVE TREATMENT AND STEPWISE BY NIR FOR HIGH IMPACT POLYSTYRENE LOADED WITH 15% ALCOHOL FROM DIFFERENT HEAT TREATMENT AND STORAGE TIME. IT COULD GET LESS (SEC), SEC WAS 0.6439 AND R2 VALUE WAS 0.9096 AND R OF CALIBRATION WAS 0.983 AND RPD WAS 3.47. THE CALIBRATION OF WAVELENGTHS THAT USED IN THE CALCULATION WITH EVERY 8 NM, SECOND DERIVATIVE TREATMENT AND STEPWISE BY NIR FOR HIGH IMPACT POLYSTYRENE LOAD WITH 3% ACETIC ACID FROM DIFFERENT HEAT TREATMENT AND STORAGE TIME. IT COULD GET SEC WAS 0.1121 AND R2 VALUE WAS 0.9453 AND R OF CALIBRATION WAS 0.928 AND RPD WAS 3.61. THE CALIBRATION OF WAVELENGTHS THAT USED IN THE CALCULATION WITH EVERY 6 NM, SECOND DERIVATIVE TREATMENT AND STEPWISE BY NIR FOR HIGH IMPACT POLYSTYRENE LOAD WITH CORN OIL FROM DIFFERENT HEATING TREATMENT AND STORAGE TIME, IT COULD GET SEC WAS 0.7840 AND R2 VALUE WAS 0.599 AND R OF CALIBRATION WAS 0.906 AND RPD WAS 3 .

Keywords: HIGH IMPACT POLYSTYRENE IMMERSING SOLUTION NIRS

Table of Contents

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