AN EFFECTIVE SALTING-OUT ASSISTED LIQUID-LIQUID MICROEXTRACTION PROCEDURE FOR DETERMINATION OF CYSTEINE IN FOOD SUPPLEMENTS

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The most expended kind of homogeneous extraction is salting-out assisted liquid-liquid microextraction (SALLME). The extraction of the target analyte from aqueous phase is carried out with addition of high concentration of salt to water miscible organic solvent. This approach was selected for developing of sensitive preconcentration method for extraction of cysteine, based on the interaction with phenazine methosulfate followed by spectrophotometric detection.

According to the results of Fourier transform infrared and mass spectroscopy analysis, the assumed mechanism of the reaction of cysteine with phenazine can be expressed like:
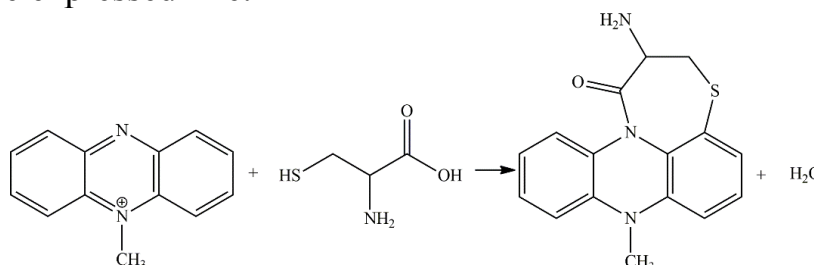
Variables that affect the SALLME such as a kind of salt, a volume of acetonitrile, a vortex and an extraction time were studied. Under the optimal conditions, the good linearity was observed in the range 0.4–6.0 µg mL^{-1} with the correlation coefficient 0.9972. The limit of detection and limit of quantification were found to be 0.14 and 0.43 µg mL^{-1}, respectively. The relative standard deviation value was lower than 7 % (n=7) and showed the good precision of the method. The enrichment factor was 25.

The developed method was applied for analysis of cysteine in food supplements. The obtained data were in good agreement with HPLC-MS/MS method.