[ID-P#035] Microextraction Combined with Digital Image Colorimetry for Chlorpyrifos Analysis

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Objective: the main objective of the study is to develop a new method for quantifying chlorpyrifos in human sample using Microextraction (ME) technique coupled with Digital Image Colorimetry (DIC).

Method: Acetone & chlorobenzene were used as disperser & extraction solvents of ME, respectively. The extract obtained after ME was subjected to color reaction with nitric acid, hydrochloric acid & ammonium molybdate. The presence of chlorpyrifos was indicated by yellow color, which was captured in a photograph using a smartphone inside a cardboard box with white light. The photograph was then developed into red, blue & green channels in the software. Using the tools of the software a peak is generated based on the intensity of the color obtained.

Results: The intensity of the color obtained is directly proportional to the concentration of chlorpyrifos in the sample. The plot thus obtained is correlated with concentration of the sample as the peak area under the plot is a function of color intensity. One sample was analysed and the concentration of chlorpyrifos was found to be 16.248ug/ml.

Conclusion: The developed method was successfully used to determine chlorpyrifos in biological materials (human urine & plasma). The suggested approach is environmentally friendly and does not require any complex high-end analytical tools, making it suitable for regular chlorpyrifos analysis.