Speciation Analysis by Solid-Phase Microextraction and Application to Atrazine

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Abstract : The main hypothesis of the dynamics of solid phase microextraction (SPME) is that steady-state mass transfer is respected throughout the SPME extraction process. It considers steady-state diffusion is established in the two phases and fast exchange of the analyte at the solid phase film/water interface. An improved model is proposed in this paper to handle with the situation when the analyte (atrazine) is in contact with colloid suspensions (carboxylate latex in aqueous solution). A mathematical solution is obtained by substituting the diffusion coefficient by the mean of diffusion coefficient between analyte and carboxylate latex, and also thickness layer by the mean thickness in aqueous solution. This solution provides an equation relating the extracted amount of the analyte to the extraction a little more complicated than previous models. It also gives a better description of experimental observations. Moreover, the rate constant of analyte obtained is in satisfactory agreement with that obtained from the initial curve fitting.

Keywords : pesticide, solid-phase microextraction (SPME) methods, steady state, analytical model
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