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Instructions for Researchers

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I am an editorial board of Pharmaceutical Analytical Acta (PAA). I am an analytical chemist and microbiologist.

From the experience of evaluation of several Analytical papers, I found that several contributors do not supply Chemical Structures of the interest to analyze and HPLC or GLC chromatograms. Sometimes description of analytical conditions was insufficient. These are serious points to consider.

Most of analytical chemist can speculate how to analyze when Chemical Figures of interest is in hand. If the compound has COOH or aromatic phenol, ion suppression is necessary by adding acid to lower pH of mobile phase. If the compound of interest has NH_2 or alkali compound, it is necessary to add alkali to mobile phase for ion-suppression, otherwise plus charge of the interest may observe and tailing phenomenon of the alkali compound can be observed, especially silica-base column used. If polymer-base column is used, this kind of phenomenon may decrease.

The most difficult task to conquer is the analysis of interest in complicated matrix such as blood. Pre-treatment methods are seriously required. I have studied for simultaneous uremic toxin analysis in blood. I used the automatic solid phase extraction (SPE) equipment for recovery, otherwise if manual procedure is used recovery rate differed significantly due to inconsistent pressure. Blood urea analysis is so hard task as urea did not retain onto C-18 column. Even though urea ($NH_2(C=O)NH_2$) is a simple figure compound, simple figure compound is not always easy task to analysis. I analyzed simultaneously urea, uric acid, creatinine, methylguanizine and vitamine B12 in blood. I used the isocratic elution analysis combined with the column switching and immobilized urease column. So it is hard task to analyze simultaneously these compounds. Column is C-18 with polymer base. Column switching procedure is manual, so it is quite hard to reproduce simultaneous analysis with manual procedure at that time (1985).

These compounds are spiked into blood serum and deproteinized with acetonitrile using automated SPE. Recovery of all compounds was almost 100% and reproducibility was satisfactory. Satisfactory reproducibility was more important to analytical chemist. If the pretreatment was conducted with manual, recovery was so fluctuated due to inconsistency of pressure to the pre-column for elution.

Urea did not retain on C-18 column and both acid and alkali compounds are present as the compounds of interest, so ion suppression cannot apply (therefore polymer base column used) and used column switching and immobilized urease column. Immobilized urease column was homemade. At that time I did not consider about the gradient elution, so what will happen when used gradient elution rather than isocratic elution. At that time no reliable and reproducible gradient pump was available in Japan. Today, several superior column, automatic column switching equipment, automatic SPE and reproducible gradient pump are available.

Now, I read several papers submitted to PAA about the analysis of the compounds in blood, no SPE procedure has ever utilized. Automated SPE in complicated matrix can be quite recommended for pretreatment.

Analytical chemistry is advancing day by day, however the most important task is looking at the chemical structure of the interest and can speculate analytical conditions in mind at the beginning. In that meaning I seriously recommend to the contributors to submit chemical figures of interest for speculation of analytical conditions.

The above is my experience I ever conducted as an editorial task.

Thank you very much to supply me the space to submit my comments to PAA.

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