

[*Jpn. J. Toxicol.*, **13**, 165-174 (2000)]

[Lab. of Hygienics]

**Quantitative Analysis of Fenitrothion and Its Metabolites
in Serum and Urine by Column-Switching HPLC-DAD Method and Application to Poisoning Cases.**

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We established a rapid quantitative analysis of fenitrothion (FNT) and its metabolites by column-switching HPLC equipped with photodiode-array detection (HPLC - DAD) employing direct injection of biological samples. The detection limit was less than 10 ng per injection. Linear calibration curves for FNT and its metabolites were obtained in the range of 0.1-25 $\mu\text{g} / \text{mL}$ ($r^2 = 0.992 - 1.000$). This method was applied to three actual cases of acute poisoning, and we were able to provide the doctors with valuable informations obtained from rapid quantitative analysis of FNT and its metabolites in biological samples. We conclude that this method is clinically useful because it takes only 35 minutes to produce 3 results (FNT, FN - OX and MNP) simultaneously.

[*Jpn. J. School Health*, **42**, 283-291(2000)]

[Lab. of Hygienics]

Measurement of Residual Free Chlorine in the School Swimming Pool.

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At present, most of schools in Japan use a simple and easy color comparator based on the principle of ortho-tolidine (OT) method and diethyl-p-phenylenediamine (DPD) method. A reagent test strip based on the syringaldazine method, used widely in the United States, is a very easy way of testing without use of any apparatus. In this study, we measured residual chlorine in 50 pool water samples of 25 schools in 5 districts of Japan, and compared measured values of the syringaldazine (reagent test strip) method, OT method and DPD method. The values obtained by the three methods have good correlation with each other. The DPD method gives a little higher values than the other two. The reagent test strip method is good enough to measure residual free chlorine as an alternative method to DPD and OT methods.

[*Biochim. Biophys. Acta*, **1480**, 235-244(2000)]

[Lab. of Hygienics]

**Phosphohexose Isomerase/Autocrine Motility Factor/Neuroleukin/Maturation Factor
Is a Multifunctional Phosphoprotein.**

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Signaling is initiated by its binding to a cell surface 78 kDa glycoprotein (gp78). However, since PHI protein is a 'leaderless' secretory protein, released from cells via a non-classical route(s), we questioned whether the molecule undergoes post-translation modification while retaining proper folding and maintaining intact enzymatic and motogenic activities. The recombinant human AMF retained the biological activities of the native AMF, i.e., catalyzes phosphohexose isomerization and stimulated cell motility. Additionally, we show here that human PHI is phosphorylated at serine 185 by casein kinase II (CK II) and we provide experimental evidence suggesting that this phosphorylation is associated with secretion, thus providing insights for elucidating the intracellular signal transmission of cell response to stimulation by AMF / NLK / MF.

[*Cancer Lett.*, **157**, 15-21 (2000)]

[Lab. of Biochemistry]

Modifying Effects of Ferulic Acid on Azoxymethane-Induced Colon Carcinogenesis in F344 Rats.

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In the first experiment, the modifying effect of ferulic acid (FA) on azoxymethane (AOM) (15 mg/kg body weight, once a week, for 3 weeks)-induced formation of aberrant crypt foci (ACF) was examined in five groups. Numbers of ACF/colon of groups 2 (AOM+250 ppm FA) and 3 (AOM+500 ppm FA) at the termination (5 weeks after the start) were smaller than of group 1 (AOM alone). Those of ACF/cm² of group 3 were also smaller than of group 1. In the second experiment, a long-term assay for the effects of FA was conducted with seven groups. At the termination (35 weeks), groups 2 and 3 which were given FA during the initiation phase at doses of 250 and 500 ppm, respectively, had lower incidences of colonic carcinomas (23 and 27%, respectively) than group 1 which was given AOM alone (59%). In the third experiment, to determine whether FA could modify the activities of phase II detoxifying enzymes, GST and quinone reductase (QR) in liver and colon, 60 rats were gavaged with FA at four doses (0, 25, 50, 100 mg/kg body weight). Dosing of 100 mg/kg significantly elevated GST activity in liver, and QR activities in liver and colonic mucosa, suggesting that detoxifying enzymes are related to the blocking effect of FA on AOM-induced colon carcinogenesis.