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[Lab. of Pharmaceutics]

**Structural Features and Hypoglycemic Activity of a Polysaccharide (CS-F10)
from the Cultured Mycelium of *Cordyceps sinensis*.**

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A polysaccharide (CS-F10) purified from a hot water extract of the cultured mycelium of *Cordyceps sinensis* was composed of galactose, glucose and mannose in a molar ratio of 43:33:24; its molecular weight was about 15000. The results of chemical and spectroscopic investigations suggest that CS-F10 has a comb-type structure, and has α -D-glucopyranosyl residues on the terminal of the side-chains. CS-F10 significantly lowered the plasma glucose level in normal, STZ-induced diabetic and epinephrine-induced hyperglycemic mice after i.p. administration. Administration of CS-F10 to diabetic mice significantly increased the activity of hepatic glucokinase. A significant reduction in the hepatic glucose output was observed following the infusion of CS-F10 using the perfused rat liver. CS-F10 also significantly decreased protein content of glucose transporter 2 from rat liver by i.p. administration.

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[Lab. of Pharmaceutics]

**Pharmacokinetics of etoposide after intrathoracic instillation to lung cancer
patients with pleural effusion.**

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To examine etoposide (VP16) levels in serum and pleural effusion after intravenous infusion or intrathoracic instillation to lung cancer patients. Four patients were administered VP16 by intrathoracic instillation and three patients were administered it intravenously. Serum, urine, and pleural effusion were collected and VP16 levels in the biological fluids were determined by HPLC. Pharmacokinetic parameters were calculated. VP16 distributed rapidly into pleural effusion after intravenous infusion. In two of three patients, VP16 levels in pleural effusion were maintained at constant levels more than 24 hours in spite of the decline in serum VP16 levels. After intrathoracic instillation, VP16 in pleural effusion reached high levels and eliminated slowly. Serum levels of VP16 were relatively low compared with those in pleural effusion. It was demonstrated that intrathoracic instillation of VP16 might be useful for managing malignant pleural effusion and reducing systemic side-effects by cutting down the dose.

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[Lab. of Hygienics]

**A Method for Rapid Analysis of Pesticides Causing Acute Poisoning in Patients
and Application of This Method to Clinical Treatment.**

Hiromi MORI, Takahiko SATO, Hisamitsu NAGASE,* Kumi TAKADA,
Kazutomo OKADA, and Futoshi YAMAZAKI

Pesticide concentration in serum must be measured in order to determine the proper treatment for patients with pesticide poisoning. We previously investigated the effectiveness of a screening method for fat-soluble pesticides by HPLC equipped with photo-diode-array detection (HPLC-DAD) and found that the method was effective in emergency medical units. In the present study, we investigated the effectiveness of a method for quantitative analysis for these fat-soluble pesticides. The concentrations of all pesticides were proportional to the peak area up to $100 \mu\text{g/ml}$ (injection amount: $1 \mu\text{g}$), and the recovery ratio was excellent. This method was applied to three actual cases of acute poisoning, and we were able to give important advice to the doctor according to the concentration of the pesticides in the serum. The screening of pesticides by HPLC-DAD was confirmed by GC-MS.

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[Lab. of Hygienics]

**Analytical Method for Screening and Quantification of Phosphated Amino
Acid Herbicides in the Serum of Acutely Intoxicated Patients
Using HPLC with a Diode-Array Detector.**

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Miki NAGASAKA, and Futoshi YAMAZAKI

An analytical method was established for the screening and quantification of phosphated amino acid herbicides (PAAHs), such as glyphosate, glufosinate, and bialaphos, which frequently cause intoxication. The procedure involves the extraction of PAAHs by Ultra-Free 4 from serum, derivatization of the filtrate using *p*-toluensulfonyl chloride, and then HPLC analysis of the resulting *p*-toluensulfonyl derivatives. They can be identified by their UV spectra and retention times by comparison with authentic samples. The detection limits were less than 10 ng, and sufficient for determining pesticides in serum. The sera of three acutely poisoned patients who took one of the above three PAAHs were examined by this method, and the results were shown to be accurate and sensitive.