[*S.T.P. Pharm. Sci.*, 7, 307-314 (1997)] [Lab. of Pharm. Engineering]

Assessment of Inertial Separation Techniques Used for Pressurized Meterd Dose Inhalers to Evaluate Respiratory Deposition of Aerosolized Wogon Extract Dry Powder in vitro.

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The applicabilities of inertial separation apparatuses, i.e. a cascade impactor, a modified Kirk lung and a twin impinger used for pressurized metered dose inhalation aerosols, were investigated to characterize dry powder inhalation aerosols. As a model dry powder inhalation aerosol, Wogon extract granular powders with various mechanical strengths for dispersing were employed. These granules were dispersed via a Spinhaler. It was confirmed that the dry powder inhalation aerosols were reasonably classified by using the cascade impactor and the twin impinger to compare their data obtained with a laser diffrattion particle analyser.

[*Europ. J. Pharm. Biopharm.*, **44**, 323-326 (1997)] [Lab. of Pharm. Engineering]

A New Practical Index to Predict Capping Occurring during the Tableting Process.

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When pharmaceutical powders are compacted into tablets, cracking, usually termed capping, sometimes occurs inside the tablets. The capping index is very useful for predicting capping during tableting. However, it is difficult to measure the residual die wall pressure unless a special die with a strain gauge is used. In this study, the physical meaning of the capping index was rediscussed more quantitatively and a new useful practical method to find this index was investigated by estimating the residual die wall pressure from a crushing test of a cylindrical compact. The residual die wall pressure was approximately proportional to the reciprocal of the maximum strain. The experimental relationship, which is very practical method to estimate the residual pressure, was obtained between two parameters. The equation to calculate the capping index using the crushing test results and tablet shape was found. Furthermore, it was proved that tablets without capping can be successfully formulated and designed from the equation.

[*Biol. Pharm. Bull.*, **37**, 118-121 (1997)] [Lab. of Hygienic Chemistry]

Polysaccharides in Fungi. XXXVIII. Anti-diabetic Activity and Structural Feature of a Galactomann Elaborated by *Pestalotiopsis* Species.

Tadashi KIHO,* Sadahito ITAHASHI, Miho SAKUSHIMA, Toshiyuki MATSUNAGA, Shigeyuki USUI, Shigeo UKAI, Hironobu MORI, Hideki SAKAMOTO and Yukio ISHIGURO

A Fungus of *Petalotiopsis* species produced an extracellular, water-soluble polysaccharide (PS-N). PS-N exhibited significant hypoglycemic activity in streptozotocin-induced diabetic mice following intraperitoneal administration and had an effect on oral glucose tolerance in normal mice following oral administration. PS-N was homogeneous on gel chromatography, it is composed of galactose and mannose in a molar ratio of 1:9, and its molecular weight was estimated by gel chromatography to be about 24000. Its structure was investigated by a combination of chemical and spectroscopic methods. The results indicated that PS-N, a highly branched galactomannnan, is composed of β-(1→3)-linked D-galactopyranosyl and non-reducing terminal β-D-galactofuranosyl residues, in addition to α-D-mannopyranosyl residues of a yeast mannan type.

[*Chem. Pharm. Bull.*, **45**, 725-727 (1997)] [Lab. of Hygienic Chemistry]

Preparation of Novel (1→3)-β-D-Glucans Having Reducing Glucose Side Chains.

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Novel (1→3)-β-D-glucans [GPBCD: (3-*O*-glucopyranosyl)-1'-butylated curdlan, GPECD: 3-*O*-glucopyranosyl)-1'-ethoxyethylated curdlan, GP6CD: 6-*O*-glucopyranosylated curdlan, and GP3CD: 3-*O*-glucopyranosylated curdlan] having reducing glucose side chains were prepared from (1→3)-β-D-glucan (curdlan: CD) with halogeno glucose isopropylidene derivatives in dimethyl sulfoxide containing dimsyl sodium, followed by treatment 40% trifluoroacetic acid to remove protecting isopropylidene groups. The side chain glucose moiety was linked directly or through a spacer at various positions except for its anomeric carbon. High fluorescence intensities of these derivatives were observed in the aniline blue test, suggesting that the derivatives retain the high-ordered structure required for the antitumor activity of glucans.