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In connection with the synthesis of marine products and their analogues as potential antibiotics, we report here the total synthesis of (+)-lauthisan using diastereoselective alkylation and ring closing metathesis as key steps. The starting D-glyceraldehyde acetonide was converted into (5R)-ethyl-(3S)-hexyl-(6R)-hydroxymethyl-[1,4]dioxan-2-one in 7 steps *via* bidentate chelation controlled asymmetric alkylation. Then, the dioxanone was transformed in 5 steps *via* radical allylation and Wittig olefination to the requisite diene for ring closing metathesis. The diene was exposed to Grubb's catalyst to produce 8-membered oxocane possessing the all-carbon framework of the target natural product. Chemical modification of the oxocane ring under conventional conditions completed the total synthesis of (+)-lauthisan.

[PD1-57] [10/19/2001 (Fri) 14:00 - 17:00 / Hall D]

Curing Characteristics and Fracture Mechanism of Liquid Crystal Epoxy(LCE) for Medical Polymers

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As medical science technology developing, medical polymer part has been importantly known to many investigators. Because medical polymers present good mechanical, electrical, thermal, chemical, and optical properties, they were utilized as artificial organs for the human being. The study of medical polymers, such as curing characteristics and physical properties, is principles to use as medical polymer. In our study, we investigated curing characteristics of liquid crystal epoxy (LCE) thermosets and fracture mechanism. Curing characteristics of LCE polymers was analyzed by FT-IR spectroscopy and fracture behaviours of them were simulated using cellular automata (CAs). From this work, we could understand the curing mechanism and fracture mechanism of LCE polymers. These results are very useful to apply LCE polymer and simulate the fracture behaviour of LCE for the understanding, test, and applications.

Poster Presentations - Field D2. Pharmacognosy

[PD2-1] [10/19/2001 (Fri) 14:00 - 17:00 / Hall D]

Four α-Amyrin Triterpenoids, and their Cytotoxicity and Topoisomerase I Inhibition from the Spikes of Prunella vulgaris

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Prunella vulgaris Linne *var. lilacina* Nakai (Labiatae) is a perennial herb widely-distributed in the temperate regions of Korea, Japan and China. The spikes of this plant, Prunellae Herba, is red-violet and lips shape, and blossom between May and July. To obtain the cytotoxic constituents from this plant, the spikes were extracted with MeOH and MeOH Ext. was subsequently fractionated into four parts, methylene chloride, n-butanol-1, n-butanol-2 and water fractions. Chromatographic separation of the n-butanol-1 fraction has yielded four triterpenoids. Their structures were elucidated by chemical and spectral evidences. All of the compounds are α-amyrin type.
Compound 1 is 3β-hydroxyurs-12-ene-28-oic acid (ursolic acid) and compound 2 is 2α, 3α-dihydroxyurs-12-ene-28-oic acid. Compound 3 is 2α, 3α, 19α-trihydroxyurs-12-ene-28-oic acid (euscaphic acid) and compound 4 is the triterpenoid which has seven hydroxyl groups, two carboxyl groups and two double bonds. Compound 1 was previously isolated from this plant and reported, so this compound is already well known. On the other hand, Compounds 2 and 3 were known, but were first isolated from this plant.
Compounds 1 and 4 showed approximately 80% cytotoxicity for HepG2 cell in low concentration of 5㎍/㎖ and compounds 1 and 2 exhibited above 95% topoisomerase I inhibition ability in concentration of 50㎍/㎖. In here, it is the remarkable fact that compounds 1 and 2 have both cytotoxicity and topoisomerase I inhibition ability.

[PD2-2] [10/19/2001 (Fri) 14:00 - 17:00 / Hall D]

Composition of the Essential Oil of Chrysanthemum sibiricum, and Biological Properties

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GC-MS data on the volatile oil of Chrysanthemum sibiricum herbs led to the identification of 2-methoxythioanisol (1), (+)-camphor (2), geraniol (3), citral (4), thymol (5), eugenol (6), beta-caryophyllene oxide (7), beta-caryophyllene (8), beta-eudesmol (10), juniper camphor (11) together with an unknown substance (9) based on the mass spectral library and literature data. The components were confirmed by the comparisons with authentic specimens. the oil of C. sibiricum (CS-oil) exhibited significant cytotoxicities on HL-60 (IC50 12.5 microg/ml) cell and mild on HepG-2 cell (IC50 102.4 microg/ml), though the free-radical scavenging activity was found not to be potent (IC50 97.2 microg/ml). Treatment of CS-oil with 10 mg/kg dose (i.p.) decreased the content of malondialdehyde induced by bromobenzene by 35%, which activity was comparable to that of 20 mg/kg kaikasaponin III but weaker than 10 mg/kg tectorigenin. It was suggested that the unique composition of CS-oil might contribute to the chemopreventive effect for cancer.

[PD2-3] [10/19/2001 (Fri) 14:00 - 17:00 / Hall D]

Chemical Components from the Stem Bark of Kalopanax septemlobus

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The stem bark of *Kalopanax septemlobus* (Thunberg) Koidz. (Araliaceae) commonly distributed throughout Korea has been used as traditional medicine for effective on antiinflammatory, expectorant, tranquillizer and antirheumatic. The preview authors reported various saponins and lignans from Kalopanax species. The present paper describes isolation and structural characterization of two compounds which were isolated for the first time from Kalopanax species. Their structures were 3,3'-bis