P75

In Vitro Antimicrobial Activity and Minimal Inhibitory Concentration (MIC) of Compounds from *Schizandra chinensis* against oral pathogens.

Mi Ran Park, Hye Jung Choi, Seung Hee Woo, Min Jung Hwang[1], Ja Young Moon[2] and Woo Hong Joo*

Interdisciplinary Program in Biotechnology, [1]Department of Biology, [2]Department of Biochemistry and Health Sciences, Changwon National University, Changwon.

The purpose of the present study was to determine the antimicrobial activity of eight compounds from *Schizandra chinensis* on oral pathogens, such as *Streptococcus mutans, Streptococcus sanguinis, Streptococcus sanguis , Streptococcus salivaris subsp. thermophols, Porphyromonas gingivalis, Fusobacterium nucleatum subsp. nucleatum* and *Candida albicans*. Compounds were purified and isolated from *Schizandra chinensis and we* were prepared from propolis samples and we determined minimum inhibitory concentrations (MIC) and minimum bactericidal concentrations (MBC) of compounds on the growth of test microorganisms by using broth dilution method. *S. sanguinis* and *S. salivaris subsp. thermophols* were susceptible and MIC values ranged from 0.2 to 5.0 mg/ml for compounds activity. Benzoic aicd and sorbic acid showed most effective MIC values to the studied microorganisms. MBC values of sorbic acids were ranged from 1.0 to 5.0 mg/ml. Most of compounds were more effective against *S. salivaris subsp. thermophols* and *Fusobacterium nucleatum subsp. nucleatum* on the antimicrobial activity. But minimum inhibitory concentrations (MIC) were almost similar to oral pathogens. The compounds of *Schizandra chinensis* were vanillic acid, gallic acid, 3,4-dihydroxy benzoic acid, Quinic acid, 4-Methyoxy benzoic aicd, Sorbic aicd, Syringic acid and Benzoic acid. Because of increased antimicrobial resistance, *Schizandra chinensis* may be kept in mind in the treatment of oral cavity diseases.

Key words: antimicrobial activity, minimum inhibitory concentrations, *S. salivaris subsp. thermophols, Fusobacterium nucleatum subsp. nucleatum*

P76

Biological properties of analogues of pleurocidin isolated from *Pleuronectes americanus*

Dong Gun Lee

School of Life Sciences and Biotechnology, College of Natural Sciences, Kyungpook National University, 1370 Sankyuk-dong, Puk-ku, Daegu 702-701, Republic of Korea

Pleurocidin (Ple) is a 25-residue peptide derived from the skin mucous secretion of the winter flounder, *Pleuronectes americanus*. In this study, we investigated antimicrobial properties of Ple and its analogues. Ple showed potent antimicrobial activities by disrupting membranes without high hemolysis. To develop this peptide as novel therapeutic agents, we designed analogues of which a net hydrophobicity was decreased. The analogues were synthesized by arginine or serine substitution at positions 1, 3, 12, 19 or 21 at the hydrophobic face of Ple without changing its amphipathic structure. The result exhibited that the analogues maintained antimicrobial activities and abilities for permeabilizing phospholipids membranes without hemolysis. In succession we designed a synthetic enantiomeric peptide composed of all-D-amino acids to enhance a proteolytic resistance. To investigate the antibiotic effect of L- and D-Ple, an antibacterial activity and hemolytic effect were tested. D-Ple showed a decreased antibacterial activity and a dramatically decreased hemolytic activity compared with L-Ple. The hemolytic effect of analogue was further confirmed by using calcein leakage measurement with liposome. To elucidate these results, the secondary structure of the peptides was investigated by circular dichroism (CD) spectroscopy. The results revealed that D-Ple, as well as L-Ple, had typical alpha helical structures which were mirror images, with a different helicity. These results suggested that the discrepancy of the structure between the two peptides made their antibacterial activity distinct. Finally, we investigated the discrepant antimicrobial activities between L- and D-Ple towards bacteria and fungi in lipid level. The calcein leakage measurement with liposome indicated that L- and D-Ple exerted more potent activity against bacterial and fungal cell membranes, respectively.