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Since bacterial resistance has been a major problem in Korea, we monitored antibiotic resistance of Staphylococcus aureus and Streptococcus pneumoniae strains isolated from hospital patients in Korea and studied resistance mechanisms of them in relation to stress proteins.
From minimum inhibitory concentrations (MICs) of 107 S. aureus strains isolated from hospital patients in the year 2000, the resistance rates were as follows; penicillin resistant, 99%; oxacillin resistant (MRSA), 80%; vancomycin resistant (VRSA), 0%. In the presence of Triton X-100, bacterial lysis of ATCC25923 (methicillin-susceptible S. aureus) and STA007 (methicillin-resistant S. aureus) were suppressed after heat shock (culture temperature was shifted from 30 ℃ to 40 ℃ for 10 minutes) and the suppression of lysis by heat shock was greater in the STA007 than in the ATCC25923.
When lysis of the wild type SKP3026 and it's clpL mutant of S. pneumoniae strains by tetracycline were compared, lysis of the clpL mutant was faster than that of the wild type.
Heat shock suppressed bacterial autolysis in S. aureus and 84-kDa stress protein (ClpL) of S. pneumoniae suppressed autolysis by tetracycline. Therefore stress proteins do not seem to be the major mechanism of antibiotic resistance, but contribute to increase viability in resistant strains of S. aureus and S. pneumoniae.

[PC2-10] [04/19/2001 (Thr) 15:30 - 16:30 / Hall 4]

Bacterial Arylsulfate Sulfotransferase as a Reporter System

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In order to investigate whether the arylsulfate sulfotransferase (ASST) is suitable as a sensitive reporter system for Gram-positive bacteria, a reporter vector carrying the fragments of the *astA* structural region was constructed and designated as pSY815. To test the utility of the ASST reporter system in *Bacillus subtilis*, the regulatory regions of *ermC* and *ermAMR* were inserted upstream of the coding region of the reporter gene, to generate the vectors pSY815-EC and pSY815-ER, respectively. In the absence of an inserted regulatory region, the plasmid displayed very low background activity. The ASST activity under the control of the *ermC* regulatory region was increased 4.42-fold when induced by 0.1 ㎍/ml of erythromycin. Under the *ermAMR* regulatory control, the activity was increased 1.66-fold when induced by 0.2 ㎍/ml of tylosin. These results were consistent with a *lacZ* reporter gene assay of the *ermC* and *ermAMR* regulatory regions. This indicates that this reporter system is very sensitive.
The lack of endogenous activity, the simple detection of enzyme activity in the living cell, the commercially available non-toxic substrates, and the high sensitivity make ASST a useful genetic reporter system for monitoring gene expression and understanding gene regulation in Gram-positive bacteria.

[PC2-11] [04/19/2001 (Thr) 15:30 - 16:30 / Hall 4]

Genetic Characterization of Vancomycin-Resistant Enterococci from Raw Milk

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To determine the occurrence of vancomycin-resistant Enterococci in raw milk sample, we examined raw milk samples for 6 months. Enterococci were isolated directly from Enterococcal selective agar platessupplemented with 2mg of vancomycin per liter. 19strains were selected and identified by Vitek system. To determine resistance, 19 isolates were tested with vancomycin and teicoplanin.Vancomycin-resistant Enterococci were genotyped by PCR analysis and 5 of 19 isolates were VanC-1 type.

[PC2-12] [04/19/2001 (Thr) 15:30 - 16:30 / Hall 4]

Carrageenan-induced ulcerative colitis induces GAGs degrading enzymes of intestinal bacteria

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Ulcerative colitis (UC) is a non-infectious chronic intestinal inflammatory disease in humans. These animal models were mainly made by hydrolyzed carrageenan and 2,4-dinitrochlorobenzen. However, the mechanism underlying their pathogenesis are not well known. Therefore, we here studied the relationship between intestinal bacterial enzymes and carrageenan/DNCB-induced UC.
These UC model mice all showed signs of diarrhea, occult blood, prominent regenerations of the colonic mucosa and shortening of large intestine. In hydrolyzed carrageenan- and DCNB-induced UC model mice, GAGs degrading enzymes of intestinal bacteria, particulary chondroitinase and hyaluronidase, were potently induced. The hydrolyzed carrageenan exhibited the in vitro cytotoxicity against intestinal epithelial cell line (IEC18). The hydrolyzed carrageenan also induced bacterial GAGs-degrading enzymes in human intestinal bacterial culture system. These UCs were improved by antioxidant herbal drugs.

Poster Presentations - Field C3. Cell Biology

[PC3-1] [04/19/2001 (Thr) 15:30 - 16:30 / Hall 4]

A Role of NF-kB Activation on Melanogenesis in Transfectant Human HaCaT Keratinocytes

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NF-kB (nuclear factor- kappa B) plays a particularly central role in epidermal biology. It is well established that ultraviolet radiation (UVR) is one of the mechanisms to induce the activation of NF-kB in human skin. NF-kB activation by UVR is involved in immune or inflammation responses as well as growth control of cells. In order to demonstrate the role of NF-kB activation on meleanogenesis, we transfected pNF-kB-SEAP-NPT plasmid into human HaCaT keratinocytes. Transfectant cells released