Liu XiWen°, Sok DaiEun

College of Pharmacy, Chungnam National University, Taejon 305-764, Korea

Molecular fate of thyroglobulin (Tg) is controlled by oligomerization, and deoligomerization. Here, we investigated the protein disulfide isomerase (PDI) and/or peroxidase-induced oligomerization of unfolded thyroglobulins, which were prepared from the treatment of bovine thyroglobulin with heat, urea or thiol/urea, on the basis of SDS-PAGE analyses. In addition, the enzymatic oligomerization was compared with non-enzymatic oligomerization. The thermally-induced oligomerzation of Tg, dependent on GSH redox state, was affected by ionic strength or detergent. Meanwhile, the PDI-catalyzed oligomerization, time-dependent, was the most remarkable with unfolded/reduced Tg, prepared from the treatment with urea/DTT, while thermally-unfolded Tg was less sensitive. Similarly, the oligomerization of unfolded/reduced Tg was also mediated by peroxidase/hydrogen peroxide. However, PDI showed no remarkable effect on the peroxidase-mediated oligomerization of unfolded or unfolded/reduced Tg. Additionally, the reductive deoligomerization of oligomeric Tg was exerted by PDI in excessively reducing state. Based on these results, it is suggested that PDI catalyzes oligomerization of thyroglobulin through the formation of disulfide bond, and its deoligomerization in the molecular fate, and this process may require a specific molecular form of thryglobulin, optimally unfolded/reduced, in proper redox state.

[PC1-43] [04/18/2002 (Thr) 14:00 - 17:00 / Hall E]

Influence of Aging on MAPKs Activity in Rat Kidney

Jung KyungJin°, Kim HyonJeen, Yu ByungPal, Chung HaeYoung

College of Pharmacy, Pusan National University, Pusan 609-735, Korea, and Department of Physiology, The University of Texas Health Science Center at San Antonio, Texas 78229-3900, USA

Mitogen-activated protein kinases (MAPK), which include the extracellular signal-related kinases (ERK), the c-Jun N-terminal kinases (JNK), and the p38 MAPK, are important regulatory proteins by which a wide variety of extracellular signals are transduced into intracellular sites. Recent studies report that reactive oxygen species (ROS) regulate mitogenic signal transduction in various cell types. In the present study, we investigated the effects of aging and calorie restriction (CR) on ROS generation and MAPK activity in rats using kidney isolated from Fischer 344 rats, ages 6, 12, 18, and 24 months fed ad libitum (AL) and CR diets. Results showed that total ROS generation increased with age in the AL rats, while little change occurred in CR rats, even in senescent, 24-month-old rats. Results also showed that the aging process strongly enhanced all three of the MAPK activities studied, ERK, JNK, and p38 MAPK, in a fashion parallel to increased ROS generation. Conversely, we observed CR to markedly suppress the age-related activation of MAPKs. Based on these data, we concluded that an age-related increase in MAPK activity is associated with increased ROS and that CR modulates the MAPK activity.

[PC1-44] [04/18/2002 (Thr) 14:00 - 17:00 / Hall E]

Collaborative study for establishment of KFDA standard for human recombinant Interferon alpha-2a for potency

Choi Youngju°, Kim Seonmi, Jung Sangmi, Shin Won, Jeong Jayoung, Joung Jeewon, Oh Ilung, Jin Jaeho, Kim Gihyun, Lee Seokho, Sohn Yeowon

Biologics Evaluation Department, Korea Food and Drug Administration

The complexity of human recombinant interferon alpha made by different manufacturers can show various biological activities and raise a number of scientific issues with regard to biological standardization. Therefore, individual standards were required for biological standardization and potency determinations of individual interferon alpha subtypes. To establish KFDA standard for human recombinant interferon alpha-2a, KFDA organized a collaborative study. KFDA and other 4 manufacturers participated in this study. Participants were asked to assay the candidate standard in their own bioassay, which was an antiviral assay using MDBK/VSV system, in terms of the 2nd international standard for recombinant interferon alpha-2a (NIBSC 95/650). For each assay, all raw data were analysed by their own analytical methods and the same data were analysed by methods of parallel line analysis with assessment of regression, linearity and