Seminar Announcement

PHYSIOLOGY
National University of Singapore

Redox Modulation of Pro-inflammatory and Anti-inflammatory Signaling for Cancer Chemoprevention

Young-Joon Surh, PhD
Director and Professor
Tumor Microenvironment Global Core Research Center, College of Pharmacy & Cancer Research Institute, Seoul National University, Seoul, Republic of Korea.

The implication of inflammatory cell/tissue damage in pathophysiology of human cancer and some metabolic disorders is under intense investigation both at the research level and in clinical practice. Numerous studies have been reported with the global biochemical profiling technologies, such as DNA microarray, proteomics, metabolomics, lipidomics, etc., to identify and characterize a series of critical molecules/changes in the inflammatory signaling. It is by gaining this type of mechanistic understanding of a disease that researchers will unlock the keys to discovering new diagnostics and therapeutic strategies for the management of inflammation-associated metabolic disorders. Inflammation, a major culprit of cancer, can modulate NF-kB, AP-1, Nrf2, HIF-1a, STAT3 and p53 tumor suppressor. The proper regulation of these redox-sensitive transcription factors mediating pro- or anti-inflammatory signaling hence provides important strategy for the chemoprevention and treatment of cancer.

15-Hydroxyprostaglandin Dehydrogenase as a Novel Target for Chemoprevention of Inflammation-Associated Carcinogenesis

Hye-Kyung Na, PhD
Department of Food and Nutrition, College of Human Ecology, Sungshin Women's University, Seoul 142-100, South Korea

15-Hydroxyprostaglandin dehydrogenase (15-PGDH) is the key enzyme that catalyzes the first step in the inactivation of PGE_2. 15-PGDH has been known to be as a physiological antagonist of COX-2. In the present study, we have observed that expression of 15-PGDH is decreased in dextran sodium sulfate (DSS)-treated mice mucosa, while expression of COX-2 increased. To determine whether 15-PGDH is negatively regulated by COX-2, we utilized a selective COX-2 inhibitor celecoxib. Oral administration of celecoxib increased the 15-PGDH expression while the same treatment decreased COX-2 expression in DSS-treated mouse colon. Moreover, 15-PGDH expression in colonic mucosa following treatment with AOM plus DSS was more prominent in COX-2 knockout mice than that observed in COX-2 wild type animals. Likewise, levels of constitutively expressed 15-PGDH were higher in COX-2 knockout mice. In patients with colon tumors, the expression of 15-PGDH was markedly reduced in adenomas and carcinomas, compared with normal surrounding tissues. These finding suggest that expression of 15-PGDH is negatively regulated by COX-2, which may contribute to the inflammation-associated colon carcinogenesis.

Date	28 January 2013 (Monday)
Time	12 nn – 1 pm
Venue	SMART Classroom (#04-01) Level 4, MD6 Centre for Translational Medicine NUS Yong Loo Lin School of Medicine **Convenor** : **Prof Shazib Pervaiz**