SJSU | DEPARTMENT OF CHEMISTRY

CHEMISTRY Departmental Seminar

Fall 2017
CHEM 285 Schedule
Tuesdays at 4:30-5:45PM
Room Duncan Hall 250

October 24, 2017

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California State University, Fresno

The Crosstalk between Dietary Natural Products and Prostate Cancer Therapeutic Agents

Approximately 300,000 men worldwide, of whom 28,000 are American men, die each year of advanced, metastatic prostate cancer due to no effective treatment available at the moment. There exists a tremendous difference in the rate of incidence of prostate cancer between Western (120 per 100,000 in Northern America) and East Asian countries (less than 10 per 100,000 in Asia). The soared risk of prostate cancer in the first generation of Asian men relocating to the United States suggests the possible potential of Asian traditional food in preventing prostate cancer. Several dietary natural products have been demonstrated through cancer cell models and animal models to possess potential in preventing and treating prostate cancer. One major disadvantage of the dietary natural products as drug candidates is their poor pharmacokinetic profile due to their poor water solubility and bioavailability. This critical problem, together with their moderate potency, prevents them from becoming clinically used chemotherapeutics. However, this poses promises for scientists to search for enhanced dietary natural products-based anti-prostate cancer agents.

The objective of our research is thus to engineer more effective derivatives and analogues of dietary natural products for potential clinical use to treat advanced hormone-refractory prostate cancer. Four dietary natural products, curcumin, silybin, quercetin, and fisetin, were selected as our lead compounds to develop potential anti-prostate cancer agents through appropriate chemical modifications. So far, we have designed and synthesized several groups of analogues (over 350 compounds) that are at various development stages. Among them, three groups of analogues have been established as promising scaffolds for further in-depth development. Five promising analogues showed not only excellent in vitro cytotoxic potency but also markedly improved *in vivo* pharmacokinetic profiles.

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