Eight Annual AACR International Conference on Frontiers in Cancer Prevention Research

Houston, Texas, U.S.A.

06 – 09 Disember 2009

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Pusat Pengajian Sains Pergigian

be discussed in detail. These results are based on the work supported by the USDA-CSREES # 2009-34402-19831 "Designing Foods for Health" through the Vegetable and Fruit Improvement Center.

B73 Chemopreventive effect of *Streblus asper*, a bonsai plant, on osteosarcoma cells: A preliminary study. Azman Seeni[1], Ridhwan Abdul Wahab[2], Nur Ayunie Zulkepli[1], Wan Nur Hidayati Wan Sulaiman[1], Muhammad Zuhaili Nor Yahya[1], Mohammad Razak Hamdan[3]. [1]Universiti Sains Malaysia, Kota Bharu, Malaysia; [2]International Islamic University, Kuantan, Malaysia; [3]Universiti Sains Malaysia, Penang, Malaysia.

Epidemiological studies have demonstrated a positive correlation between consumption of vegetables, fruits and beverages with reduced risk of cancer. It is estimated there are around 8,100 plant species in the Malaysian rain forests, with 10% of them reported to have some medicinal value. However, to date in Malaysia, not much investigation has been done on chemopreventive activities on cancer although Malaysian plants are an exclusive source of effective chemopreventive agents and therefore, this background leads to the premise that our local plants such as Streblus asper could have greater potential for the chemoprevention activities. Streblus asper is well known as an expensive bonsai plant which is indigenous to tropical countries such as Malaysia, Thailand, Sri Lanka and India. It is used traditionally in leprosy, piles, diarrhea, dysentery, elephantiasis and cancer. It finds place in Ayurvedic Pharmacopoeia of India and also been described in some monographs, but none have reported its activity as chemopreventive agents and the underlying mechanisms remain unclear. In the present study, we try to identify its biological properties and the cytotoxicity effect on normal liver and kidney cells. Using the osteosarcoma cells as our in vitro model, the IC50 of Streblus asper root extract was determined and observed its effect on the osteosarcoma cells morphology that changes within time, the anti-proliferative pattern and live-death analysis under confocal microscope analysis.The results showed that the root extracts did not contained any heavy metals compound such as mercury and cadmium and with less arsenic (0.02 ppm) and plumbum (0.07 ppm) and showing non-cytotoxic effect on vero cells (normal kidney cells) and WRL-68 cells (normal liver cells). Our HPLC profiling analysis also revealed antioxidants compounds exist in the Streblus asper root extracts such as caffeic acid which has been shown to act as a carcinogenic inhibitor. Although the low-level of anti-oxidants been found from the extracts but it still can inhibit the growth of the osteosarcoma cells which also exert apoptosis features like cell shrinkage (atrophy) and vocalization in time and dose-dependent manner. The plant extracts IC50 doses was at 0.05% of root extracts and it also demonstrated the anti-proliferative effect by suppressed the cells growth as early as 12 hours of treatment and marked cell death till day 6. On live-death analysis under confocal microscope using Calcein and Ethidium staining confirmed that Streblus asper root extract exert cell death to osteosarsoma cells.This study is just a preliminary study as to identify its pharmacological properties on carcinogenesis and further investigation is still on-going to develop it as the chemopreventive agent especially to determine the signaling pathway involved.

B74 Phenethyl isothiocyanate and 4-phenylbutyl isothiocyanate inhibit the proliferation and viability of human renal carcinoma cells *in vitro*. Maruf Khan, Henry Ciolino. University of Texas at Austin, Austin, TX.

Epidemiological studies have demonstrated a protective association between dietary intake of cruciferous vegetables and the incidence of renal cell carcinoma. Isothiocyanates (ITCs) are a class of sulfur-containing phytochemicals found uniquely and abundantly in cruciferous vegetables (broccoli, cauliflower, brussel sprouts, etc). We hypothesize that the inhibition of renal carcinoma cell growth and viability by ITCs underlies the protective effect of cruciferous vegetables on renal cell carcinoma. To test this hypothesis, we examined the effects of two ITCs: the naturally-occurring phenethyl ITC (PEITC) and the synthetic 4-phenylbutyl ITC (PBITC) on the Caki-1 human renal carcinoma cell line. Both PEITC and PBITC inhibited the proliferation of Caki-1 cells in a concentration-dependent manner. Cell cycle analysis revealed that PEITC and PBITC caused an arrest in the G2/M phase. Additionally, higher concentrations of PEITC and PBITC were cytotoxic to Caki-1 cells (IC50 of 7.0 and 4.8 μM, respectively). PEITC and PBITC induced caspase-3/7 activity in a concentration- and time-dependent manner, indicating that the ITCs induce apoptosis in the cells. These results indicate that PEITC and PBITC may be efficacious against renal cell carcinoma and suggest that the preventive effect of diets rich in cruciferous vegetables is due to their ITC content.

B75 Herbal extract amalgam Zyflamend suppresses prostate cancer cell growth and survival through inducing androgen receptor degradation and inhibiting AR signaling. Jun Yan, Cory Abate-Shen, Aaron E. Katz. Columbia University Medical Center, New York, NY.

Background: Prostate cancer is a public health problem due to its high incidence and mortality rates. The intervention of androgen receptor (AR) signaling is one of the methods for prostate cancer chemoprevention [eg. prostate cancer prevention trail (PCPT)] and therapy (androgen deprivation therapy). It is now being increasingly recognized that natural herbal and phytochemical agents can be crucial to decease the morbidity and mortality of prostate cancer for both chemoprevention and therapy. Zyflamend is an amalgam comprised of ten different herbal extracts (rosemary, turmeric, ginger, holy basil, green tea, hu zhang, Chinese goldthread, barberry, oregano, and Scutellaria baicalensis) and preliminary data showed that it reduced serum PSA after 18-month treatment in patients who has a prior biopsy showing HGPIN. We hypothesize that Zyflamend can induce anti-cancer effects through affecting AR signaling and androgen antagonist Casodox can sensitize cells to Zyflamend.

Methods: We performed MTT, colony formation and soft agar assays to test the anti-cancer effects of Zyflamend. The alterations in cell cycle were analyzed by flow cytometry and further confirmed by Western blotting. AR and its downstream targets were analyzed at mRNA and protein level. Half-life of AR protein was tested by cycloheximide assay. The nuclear localization and activation of AR were detected by immunofluorescence and luciferase assays. Finally, the combination of androgen antagonist Casodex with Zyflamend was tested in LNCaP cells.

Results: Zyflamend showed cytotoxicity on AR expressing human prostate cancer cells (LNCaP, VCaP and 22Rv1) and mouse prostate cancer cells (CASP1.1 and CASP2.1) in a dose and time dependent manner. Long term exposure to Zyflamend also reduced colony formation capacities of prostate cancer cells in both anchorage dependent and independent assays. Flow cytometry assay revealed that Zyflamend induced G1 phase arrest and apoptosis, manifested by the induction of p21waf1 and p27kip1 protein levels and cleavage of PARP and caspase-3. Of note, Zyflamend reduced AR expression in human and mouse prostate cancer cells, regardless of their androgen responsiveness, indicating that it is not restricted to specific cell line. We found that Zyflamend can reduce AR expression level at mRNA level by semi-quantitative RT-PCR and at protein stability level by cycloheximide assay. Zyflamend reduced AR protein level, induced by DHT treatment and inhibited DHT-induced cell proliferation. Consistently, AR downstream targets genes (PSA and NKX3.1) were reduced and luciferase assay revealed that PSA and probasin promoter activities were reduced by Zyflamend in dose dependent manner. Interestingly, co-treatment with 25 uM casodex sensitized LNCaP cells to the cytotoxicity of Zyflamend.

Conclusions: These data indicate that Zyflamend suppressed cell growth through AR signaling, and suggested that the co-treatment of androgen antagonist casodex with Zyflamend may be a promising approach for chemoprevention and therapy.

AACR Minority-Serving Institution (MSI) Faculty Scholar in Cancer Research Award

The AACR MSI Faculty Scholar Awards program is supported by a generous grant from the Center to Reduce Cancer Health Disparities of the National Cancer Institute. The purposes of the award are to increase the scientific knowledge base of faculty members at MSIs, to encourage them in their research, and to assist in inspiring their students to pursue careers in cancer research.

The AACR offers these awards for participation in its meetings and conferences to full-time faculty of minority-serving institutions (Historically Black Colleges and Universities [HBCUs], Hispanic-Serving Institutions [HSIs], Tribal Colleges and Universities, and other postsecondary institutions as defined by the U.S. Department of Education) who are scientists at the assistant professor level or above.

Awardee name will be provided on site.

AACR Minority Scholar in Cancer Research Award

The AACR is pleased to administer this important award program that is supported by a generous grant from the Center to Reduce Cancer Health Disparities of the National Cancer Institute, and provides funds for the participation of meritorious minority scientists in AACR meetings and conferences. These awards are intended to enhance the education and training of minority researchers and to increase the visibility and recognition of minorities involved in cancer research.

Eligible scientists are full-time predoctoral (graduate or medical) students or residents, clinical or postdoctoral fellows, and junior faculty who are either engaged in cancer research or who have the training and potential to make contributions to this field. This program applies only to racial/ethnic minority groups that have been identified by the NCI as being traditionally underrepresented in cancer and biomedical research (African American/Black, Alaskan Native, Hispanic American, Native American, and Native Pacific Islander.) Only citizens of the United States or Canada or scientists who are permanent residents of these countries may receive this award.

Christina D. Williams, Duke University, Durham, NC, USA, B110

AACR-NCI International Investigator Opportunity Grants

The AACR and the National Cancer Institute Office of International Affairs are pleased to support this travel grant program, which aims to enhance the quality of cancer research worldwide by providing financial assistance to faculty-level researchers in low- and middle-income countries, in recognition of the need to globalize cancer research and equalize the exchange of scientific knowledge.

The grants provide 10 researchers with generous support to participate in this conference. Networking sessions and a tour of a local cancer center will also be arranged for grant recipients.

Aziza M. Hassan, National Research Center, Giza, Dokki, Egypt, B76

Fabiola Yukiko Miasaki, Federal University of Parana, Curitiba, Parana, Brazil, B120

Rosa E. Moo-Puc, Mexican Institute of Social Security, Merida, Yucatan, Mexico, B78

Solomon Eduviere Owumi, University of Ibadan College of Medicine, Ibadan, Oyo, Nigeria, A45

Natalia Ryabchenko, National Academy of Sciences of Ukraine, Kyiv, Ukraine, A8

Azman Seeni, Universiti Sains Malaysia, Kota Bharu, Kelantan, Malaysia, B73

Alpana Sharma, All India Institute of Medical Sciences, New Delhi, India, B43

Navneet Singh, Postgraduate Institute of Medical Education and Research, Chandigarh, India, B143

Cristian Gabriel Torres, Universidad Andres Bello, Santiago, Chile, A139

Carolina Wiesner, Colombian National Cancer Institute, Bogota, Colombia, B27