Natural products upregulating SMAC/Diablo genes expression from Ficus deltoidea and their role in prostate cancer chemoprevention.

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Graphical Abstract

Antecedents:
Prostate cancer ranks ninth overall and fourth among men in Malaysia according to the National Cancer Registry. Ficus deltoidea plays a vital role in Malay traditional medicine, where women consume the decoction of boiled leaves as an after-birth treatment to contract the uterus and vaginal muscles besides treating the disorders of the menstrual cycle and leucorrhoea.

Our Findings:
Interestingly, we discovered that fractions of two Ficus deltoidea varieties were selectively cytotoxic towards PC3 cell line in a panel of 7 cancer cells with low IC50 values (<30 μg/mL vs. >100μg/mL). Cell death mechanism is via apoptosis through an innovative mechanism involving the upregulation of BAX and SMAC/Diablo genes. Moreover, the extract inhibits both 2D and 3D cell migration at non cytotoxic concentrations.

Our collaborative proposal:
Such encouraging results warrant further work in order to identify the active compound/s or metabolites that might be responsible for the SMAC/Diablo mediated selective cytotoxic activity towards prostate cancer cell lines (PC3).

With this in mind, we believe that the collaboration effort with Professor Jean-Luc Wolfender of the University of Geneva could really help us in achieving this objective. Professor Jean-Luc Wolfender has vast experience in metabolomic studies related to natural product research, just finished a complete characterization of all Ficus deltoidea Malaysian varieties.

Therefore, this collaborative effort will speed up the discovery of SMAC/Diablo natural leads as well as enable us to learn and appreciate new methods and techniques in plant metabolomic research.