

Action Mechanism and Signal Pathways of *Psidium guajava* L.
Aqueous Extract in Killing Prostate Cancer LNCaP Cells

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Abstract

Aqueous extract of *Psidium guajava* L. budding leaves (PE) has been shown to possess anti-prostate cancer activity in a cell line model. We examined whether its bioactivity could be conserved either in the presence or the absence of synthetic androgen R1881. In both cases, PE was shown to inhibit LNCaP cell proliferation and down-regulate expressions of androgen receptor (AR) and prostate specific antigen (PSA). The cytotoxicity of PE was shown by enhanced LDH release in LNCaP cells. The flow cytometry analysis revealed cell cycle arrests at G(0)/G(1) phase with huge amount of apoptotic LNCaP cells after treatment with PE for 48 h in a dose-responsive manner, which was also confirmed by TUNEL assay. From the results of decreased Bcl-2/Bax ratio, inactivation of phosphor-Akt, activation of phosphor-p38, phospho-Erk1/phospho-Erk2, the molecular action mechanism of PE to induce apoptosis in LNCaP cells was elucidated. Compatible with the in vitro study findings, treatment with PE (1.5 mg/mouse/day) significantly diminished both the PSA serum levels and tumor size in a xenograft mouse tumor model. Conclusively, PE is a promising anti-androgen-sensative prostate cancer agent.