

Câncer de próstata e amigdalina (benzaldeído mais cianeto)

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Amygdalin induces apoptosis through regulation of Bax and Bcl-2 expressions in human DU145 and LNCaP prostate cancer cells.

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Prostate cancer is one of the most common non-skin cancers in men. Amygdalin is one of the nitriloxides, natural cyanide-containing substances abundant in the seeds of plants of the prunasin family that have been used to treat cancers and relieve pain. In particular, D-amygdalin (D-mandelonitrile-beta-D-gentiobioside) is known to exhibit selective killing effect on cancer cells. Apoptosis, programmed cell death, is an important mechanism in cancer treatment. In the present study, we prepared the aqueous extract of the amygdalin from *Armeniaca* semen and investigated whether this extract induces apoptotic cell death in human DU145 and LNCaP prostate cancer cells. In the present results, DU145 and LNCaP cells treated with amygdalin exhibited several morphological characteristics of apoptosis. Treatment with amygdalin increased expression of Bax, a pro-apoptotic protein, decreased expression of Bcl-2, an anti-apoptotic protein, and increased caspase-3 enzyme activity in DU145 and LNCaP prostate cancer cells. Here, we have shown that amygdalin induces apoptotic cell death in human DU145 and LNCaP prostate cancer cells by caspase-3 activation through down-regulation of Bcl-2 and up-regulation of Bax. The present study reveals that amygdalin may offer a valuable option for the treatment of prostate cancers.

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Amygdalin inhibits genes related to cell cycle in SNU-C4 human colon cancer cells.

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AIM: The genes were divided into seven categories according to biological function; apoptosis-related, immune response-related, signal transduction-related, cell cycle-related, cell growth-related, stress response-related and transcription-related genes. METHODS: We compared the gene expression profiles of SNU-C4 cells between amygdalin-treated (5 mg/mL, 24 h) and non-treated groups using cDNA microarray analysis. We selected genes downregulated in cDNA microarray and investigated mRNA levels of the genes by RT-PCR. RESULTS: Microarray showed that amygdalin downregulated especially genes belonging to cell cycle category: exonuclease 1 (EXO1), ATP-binding cassette, sub-family F, member 2 (ABCF2), MRE11 meiotic recombination 11 homolog A (MRE11A), topoisomerase (DNA) I (TOP1), and FK506 binding protein 12-rapamycin-associated protein 1 (FRAP1). RT-PCR analysis revealed that mRNA levels of these genes were also decreased by amygdalin treatment in SNU-C4 human colon cancer cells. CONCLUSION: These results suggest that amygdalin have an anticancer effect via downregulation of cell cycle-related genes in SNU-C4 human colon cancer cells, and might be used for therapeutic anticancer drug.

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Apoptosis induction of *Persicae Semen* extract in human promyelocytic leukemia (HL-60) cells.

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The major ingredient of *Persicae Semen* is a cyanogenic compound, amygdalin (D-mandelonitrile-beta-gentiobioside). Controversial results on the anticancer activity of amygdalin were reported due to its conversion to its inactive isomer, neoamygdalin. In order to inhibit the epimerization of amygdalin, we used newly developed simple acid boiling method in preparation of *Persicae Semen* extract. HPLC analysis revealed most of amygdalin in *Persicae Semen* extract was active D-form. *Persicae Semen* extract was used to analyze its effect on cell proliferation and induction of apoptosis in human promyelocytic leukemia (HL-60) cells. *Persicae Semen* extract was cytotoxic to HL-60 cells with IC50 of 6.4 mg/mL in the presence of 250 nM of beta-glucosidase. The antiproliferative effects of *Persicae Semen* extract appear to be attributable to its induction of apoptotic cell death, as *Persicae Semen* extract induced nuclear morphology changes and internucleosomal DNA fragmentation.

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Anti-tumor promoting effect of glycosides from *Prunus persica* seeds.

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Four minor components, along with the major cyanogenic glycosides, amygdalin and prunasin, were isolated from *Prunus persica* seeds (*Persicae Semen*; Tounin), and characterized as mandelic acid glycosides (beta-gentiobioside and beta-D-glucoside) and benzyl alcohol glycosides (beta-gentiobioside and beta-D-glucoside). The anti-tumor promoting activity of these compounds was examined in both in vitro and in vivo assays. All of the compounds significantly inhibited the Epstein-Barr virus early antigen activation induced by tumor promoter. In addition, they produced a delay of two-stage carcinogenesis on mouse skin that was comparable in potency to (-)-epigallocatechin gallate from green tea. Structure-activity relationships indicated that a substituent at the benzylic position with glycosidic linkage affected the in vitro and in vivo activities with an order of enhancing potency, CN<COOH<H.

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Use of the best case series to evaluate complementary and alternative therapies for cancer: a systematic review.

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The best case series (BCS) is a retrospective chart review that describes a series of patients who all appear to have benefitted from the treatment under study. The BCS has been advocated as the first research step for evaluating complementary and alternative medicine (CAM) treatments for cancer. However, the research value of the BCS has not been assessed. To address this deficiency, the present

study evaluates the primary characteristics of the BCS process through a systematic review of the English language scientific literature. Twenty-four individual BCS investigating 16 unique CAM treatments for cancer were identified. About half of the BCS reported evidence of tumor regression in association with a particular CAM treatment, but only six contained documentation adequate for publication in peer-reviewed journals. For these six BCS the number of responders per BCS ranged from 2 to 12 (median, 3.5), the proportion of responders in the total number of evaluated cases varied from 6% to 100% (median, 40%), and the proportion of evaluated cases to identified cases ranged from 18% to 53% (median, 29%). The primary factors confounding the identified BCS were lack of documentation of disease and/or the use of concurrent or recent conventional treatment. Despite these general deficiencies, four BCS (antineoplastons, hydrazine sulfate, laetrile, and Kelly-Gonzalez) were sufficiently convincing to warrant follow-up clinical trials. These data suggest that while well-documented BCS do have an impact on the research agenda, in general, additional rigor is needed during their compilation.

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