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Anti-cancer effects of garcinol in pancreatic cancer transgenic mouse model

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Pancreatic adenocarcinoma has the lowest five year survival rate among all cancer types. Depending on the stage at diagnosis, Gemcitabine, the current drug, increases the survival time by a few months. Garcinol is a polyisoprenylated benzophenone derivative from *Garcinia indica*. In this study, we investigated the *in vivo* effects of dietary Garcinol in a transgenic mouse model of Pancreatic Cancer (PaCa). In addition to investigating tumor progression in the live animal with MRI and the changes in micro RNA and gene expression by MicroRNA microarray analyses, we probed the differences in the urinary metabolomic profiles of Garcinol treated mice as compared to nontreated mice. Nuclear Magnetic resonance spectroscopy was performed on Varian-500S. Simca P+ and CHENOMX NMR suite were used for Metabolomic analysis of urinary spectra. Urinary metabolomics profiles from the Garcinol treated group were closer to those of the non- cancer group. Target analysis showed that some metabolites such as Taurine, Tartrate and Phenylacetate were in higher concentrations in Garcinol treated group compared to nontreated group. Allantoin, increased in many tumor types, was found to be lower in the Garcinol treated group compared to the cancer induced non-treated group. Our data indicates that dietary Garcinol retarded pancreatic cancer progression in transgenic pancreatic cancer mice. This *in vivo* dietary Garcinol study has highlighted the anti-cancer potential of this bioactive food component. Further investigation of the molecular pathways involved can lead to its incorporation as a chemotherapeutic agent in a clinical trial.

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