MEK4, genistein and invasion of human prostate cancer cells

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Researchers have identified MEK4 as a pro-invasion protein and the target for genistein, a dietary compound, in prostate cancer cells, according to a new study published online July 28 in the *Journal of the National Cancer Institute*.

Li Xu, M.D., Ph.D., and Raymond C. Bergan, M.D., of the Department of Medicine at Northwestern University in Chicago, and colleagues investigated the target for genistein in prostate cancer cells by assessing cell invasion and gene and protein expression of mitogen-activated protein kinase 4 (MEK4) and matrix metalloproteinase-2 (MMP-2), which is associated with cell invasion.

Overexpression of MEK4 increased MMP-2 expression and cell invasion in prostate cancer cells; decreased MEK4 expression had the opposite effect. Computer modeling showed that genistein could bind to the active site of MEK4, and an enzymatic assay showed that genistein inhibited MEK4 kinase activity. The MMP-2 transcript level was statistically significantly higher in normal prostate epithelial cells, which are target cells for chemoprevention, from untreated patients with prostate cancer than from genistein-treated patients.

"Thus, we have shown that it is possible to target motility-associated processes with genistein in patients with prostate cancer, have identified MEK4 as the therapeutic target for genistein in all six prostate cell lines examined, and have provided a possible mechanism to link high dietary consumption of genistein-containing foods with lower rates of prostate

cancer metastasis and mortality," the authors write.

Source: Journal of the National Cancer Institute (news : web)