

Green Tea Extract – EGCG

Green Tea is a popular beverage consumed in some parts of the world and is a rich source of polyphenols. Polyphenols account for about 30% of the dry part of the leaves. A polyphenolic compound, EGCC (C-epigallocatechin-3-gallate) is the most active anti cancer constituent in Green Tea.

Epidemiological studies around the world reveal that incidences of stomach and prostate cancer are lower in areas where green tea is consumed on a regular basis. Green Tea is a powerful antioxidant, cancer anti proliferative, anti tumour and anti angiogenic agent (blocking production of new blood vessels).

Green Tea exerts some of its anti cancer activity by blocking phosphorylation of tyrosine kinase pathways in the cell. Tyrosine Kinase pathways are up regulated in the cancer cell. They are called pro survival or anti apoptotic pathways (apoptosis = cell death).

The pro survival pathways are responsible for increasing the glycolysis (energy production through burning sugar) activity in the cell. They also stimulate new blood vessel growth to the tumour and aid in the cancer spreading process. Green Tea and EGCG have been shown to block these pathways and there by cause cancer cell death.

Green Tea however, has a few more tricks. It has been shown to repair DNA damage in lung cancer cells, thus restoring the cell back to normal function and ultimately apoptosis. It can modulate the expression of genes known to play a role in the cancer progression invasion, metastasis and angiogenesis.¹ These results have been confirmed in Vitro (cell culture) and in Vivo (animal studies). Specifically in nude mouse studies EGCG was shown to inhibit VEGF production. VEGF is Vascular Growth Factor, it is an enzyme secreted by active cancer to tell the host to produce more blood vessels (angiogenesis).¹

EGCG has been shown to inhibit Her 2/neu and down stream signalling in head and neck squamous cell carcinoma and breast cancer^{2 3}, ovarian cancer⁴, pancreatic cancer^{5 6}, sarcomas⁷, colon cancer^{8 9}, lung cancer¹⁰, prostate cancer¹¹, melanoma^{12 13}, oesophageal¹⁴ and glioblastoma^{15 16}.

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