Going Green to Prevent Breast Cancer: The Effect of Epigallocatechin Gallate (EGCG) on Tumor Growth in Planaria

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Many people struggle with breast cancer, and while there is no cure, several studies are being done on everyday substances believed to contribute to preventing the growth of cancerous tumors. Currently, many studies remain inconclusive. New carcinogens are found every year, as are new substances believed to fight the carcinogens. Green tea is one common substance believed to help prevent the growth of breast cancer tumors. This experiment is designed to determine if, as hypothesized, green tea antioxidants neutralize and interact with free radicals to prevent the growth of cancerous tumors in planaria worms, and the EGCG antioxidant in green tea best prevents tumor growth out of all tested antioxidants/vitamins/medications. Its results should support the idea that EGCG and other antioxidants can be used to decrease the growth rate of cancerous tumors. In order to investigate this issue, planaria were exposed to EGCG, vitamin E, beta-carotene, and carboplatin, a chemotherapy drug. Some of these planaria were then gradually exposed to the carcinogens ammonium dichromate and tobacco. Control planaria without any carcinogens or antioxidants/vitamins/medications were also placed into Petri dishes. After the first trial, the predicted outcome was supported when the carcinogens caused the growth of tumors in the planaria worms in all but those exposed to EGCG. The second trial was conducted with lesser amounts of carcinogens, again causing massive tumors to develop. The third trial was conducted with even lesser carcinogen amounts, resulting again in EGCG best preventing tumor growth, followed by vitamin E, carboplatin, and then beta-carotene. Thus, the experiment supported that regular consumption of green tea may help prevent the growth of tumors.

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