IMPACT OF LACTOBACILLUS REUTERI DSM 20016 ON BREAST CANCER PROLIFERATION

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Abstract: Probiotics are live active microorganisms that when administered orally have a beneficial effect on the host. Probiotics originate from the genus Bifidobacterium and Lactobacillus and are supplemented in yogurt, milk, kefir, cheese, and as dietary supplements. Antioxidants are molecules that have the capability of reducing or inhibiting oxidative stress and damage. Antioxidants are found in fruits and vegetables and are instrumental in the alleviation of ailments such as cardiovascular disease, high blood pressure, atherosclerosis, Alzheimer’s disease, and cancer. The objective of this study is to examine whether soluble bioactive metabolites isolated from Lactobacillus reuteri alone or in a combination with antioxidants reduce proliferation of breast cancer cells. Two breast cancer cell lines (MCF7), estrogen receptor positive and MDA-MB-468, estrogen receptor negative) are used as in vitro models. Gram-positive bacteria Lactobacillus reuteri DSM 20016 and SD2112, and antioxidants such as resveratrol and vitamin C are tested in this study. Preliminary results show that soluble bioactive metabolites from L. reuteri DSM 20016 had an inhibitory effect on the growth of MCF-7 breast cancer cells. All of the different bacterial cell lysates (heat killed, sonication, or heat killed and sonication) decreased the viability of breast cancer cells MCF-7 over a ninety-six hour time period. In addition, BCA test for protein and sulfuric acid test for hexose sugar showed moderate amounts of protein and sugar present in L. reuteri DMS 20016 bioactive metabolites. These results will elucidate new therapeutic strategies for treating breast cancer.

Keywords: Lactobacillus reuteri DMS 20016, MCF7, breast cancer, heat-killed, sonication, bioactive metabolites, probiotics