Cancer transformation and proliferation involve lengthening of telomeres by activated telomerase and genome instability. A common way to combat cancer is to target the factors that promote cancer growth. G quadruplex (G4) ligands are secondary DNA structures that bind to DNA. Effects include inhibition of transcription, translation, as well as telomerase activity to elongate telomeric ends. GRN is a synthetic lipid molecule that binds telomerase and inhibits its activity. Helicase inhibitors WRN and BLM inhibit the activity of helicase and prevent replication. The goal of this study was to screen for the treatment of breast cancer in combination of G4 ligand and GRN or helicase inhibitor. We hypothesized that there would be an additive or synergistic effect when two different types of drugs are used together. To test this hypothesis, a factorial experiment was performed to determine the best concentration for each type of drug then a co-treatment assay. Cell confluency over 3~5 days was measured to determine the toxicity of drugs. When cells were treated with a combination of G4 ligand and GRN, there seemed to be an antagonistic effect whereas a combination of G4 ligand and BLM helicase inhibitor resulted in an additive effect. Cell proliferation data indicate that addition of BLM reduces the time it takes for G4 ligand to have an effect. The difference was significant only at the beginning stages of cancer cell proliferation. Further investigation can be done to find the reason for an antagonistic and additive effect.

Themes:

Check (highlight) the most applicable theme according to the abstract.

| Innovation and Technology | Health and Wellness | Culture and Society | Sustainability and Conservation |

Comments:

You may wish to clarify this sentence: The goal of this study was to screen for the treatment of breast cancer in combination of G4 ligand and GRN or helicase inhibitor. What do you mean by screening for the treatment of breast cancer? Wouldn’t you be testing a potential treatment for breast cancer?