Synthesis of a Fusarochromanone Analog and Its Efficacy in Treating Triple Negative Breast Cancer

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Fusarochromanone is a fungal metabolite naturally produced by Fusarium equiseti, a fungal plant pathogen. The purpose of this project was to synthesize a structural analog of fusarochromanone and demonstrate the analog's efficacy in treating Triple Negative Breast Cancer. The parent compound of fusarochromanone (FC101a) has a unique alternating --ketone, --amine functionality present in the structure's ortho position. It was hypothesized that disrupting this alternating --ketone, --amine functionality by moving the carbon chain in the ortho position to the para position will disrupt the compound's function in treating Triple Negative Breast Cancer (TNBC). All testing of this compound was done by a separate laboratory. The data shows that 50% of the growth of TNBC was inhibited with a concentration of 1 micromolar of FC101a(parent compound) while the IC50 for FC101p(para isomer) was approximately 20 micromolar. The data for FC101p shows that the inhibition of the TNBC cells was equal to that of the control until a concentration of 20 micromolar was used. From this, it can be deduced that the unique structure of the alternating --ketone, --amine groups in FC101a should be left free from disruption.

Awards Won:

Third Award of $1,000