

THE EFFECT OF PROTEIN SKP-2 INHIBITION IN OSTEOSARCOMA USING DIFFERENTIAL EQUATIONS

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Osteosarcoma (OS) is an orphan and potentially fatal disease, affecting mainly the metaphyseal region in the long bones of the body, highly aggressive and a percentage of patients will develop metastasis. Some factors that promote metastasis have been identified, such as the S-phase kinase-associated protein 2 (SKP-2). Treatment is surgical together with combined chemotherapy and it has a high survival rate in absence of metastasis. When it exists, survival is precarious. Therefore, it is necessary to research other possible treatments for such cases; and mathematical modeling is both a powerful and useful tool to evaluate possible adequate candidates for a primary approach without the laboratory costs. The main aim of this study is to develop a mathematical model using differential equations that allows to determine the inhibition effects of the SKP-2 protein in different stages of OS. For this purpose, a mathematical model of the growth and development of the disease will be established for the different stages through simulation based on mouse data obtained from bibliography. The obtained model will be used to simulate and evaluate the change in the development of the diseases when SKP-2 protein is inhibited in different stages. The tumor size and its effect on the metastasis will be analyzed, as well as in which stage of disease the inhibition of SKP-2 will be more effective. The results of this study will elucidate and strengthen the scientific bases about the regulation or inhibition of SKP-2 as potential treatment for OS, especially in cases of metastasis.

REFERENCE

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