

Chapter 3

PHENOLIC CHALCONE MANNICH BASES AND THEIR CYTOTOXIC ACTIVITY

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1. INTRODUCTION

Cancer is a disease that can affect everyone, regardless of age, gender, nationality or ethnicity. According to the International Cancer Institute, it is a disease that ranks second among the causes of death with the highest mortality rate in the world. Although costly research and new treatment options are increasing rapidly in this field, the recovery rate of cancer patients can only be achieved by 20-25% (1). While the main aim of treatment should be to cure the cancer completely, this is very unlikely to be achieved. The realistic goal may be to increase the patient's life expectancy and quality. Today, surgery and radiation therapy are frequently used primarily in the treatment of a cancer patient. In addition to these treatments, chemotherapy is also frequently applied. Chemotherapy is a treatment with a large number of drugs to kill cancer cells. Chemotherapy uses drugs that destroy cancer cells. The ideal drug is expected to kill only cancer cells without harming normal cells, but this property is not present in most drugs currently used in clinical practice. Because there is not much difference in terms of quantity between malignant cancer cell and normal human cell. Cancer treatments often damage healthy cells and tissues. Side effects basically depend on the type and extent of the treatment and do not occur in the same way for everyone, and may even vary from one session to the next in the same person. For example, treatment with cytotoxic drugs often causes nausea, vomiting, loss of appetite, weakness, fatigue and anemia, and a decrease in blood cells leading to an increased risk of infection. While most people undergoing chemotherapy lose their hair, other side effects vary according to the type of drug. As a result, no chemical compound has

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publications on Mannich bases' antiproliferative effects have been published. This tendency has been expanded by the examination of aminomethylated derivatives of phenolic chalcone analogues, which was established by seminal research into the anticancer activity of Mannich bases produced from α,β -unsaturated ketones. With the inclusion of previously unknown examples of Mannich bases with potent activity, the production of cytotoxic compounds via aminomethylation of natural flavonoids and structurally related substrates continues to rise significantly. The information summarized in this update confirms the Mannich reaction's relevance in the design and synthesis of antiproliferative compounds, and hopefully provides the interested reader with structure information as well as the analytical tools needed for further advances in this ever-growing line of research.

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