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## **Master Thesis Defense**

Entitled

*EVALUATING THE THERAPUTIC POTENTIAL OF CROCIN AGAINST DIETHYLNITROSAMINE  
INDUCED EXPERIMENTAL HEPATOCELLULAR CARCINOMA IN RATS*

by

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Date & Venue

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Abstract

Liver cancer is a leading cause of cancer related death worldwide. Currently, sorafenib is the only drug U.S. Food and Drug Administration approved targeted therapy. Sorafenib, an oral multikinase inhibitor, which inhibits the proliferation of tumor cells and blocks angiogenesis. Sorafenib has been shown to treat early and mild hepatocellular carcinoma (HCC) lesions and leads to increase the survival rates up to one year but only in 44% of treated patients. Chemotherapies are the first line of defense when it comes to cancer. HCC, however, has been proven to be chemo-resistant and the side effects of chemotherapies lower the quality of life for cancer patients due to their non-selective cytotoxicity. Thus, the search for better HCC treatment options is essential.

In this thesis, the effect of crocin was tested, one of the major bioactive molecule found in saffron Crocin, is a biomolecule with strong-anti-oxidative, hepato-protective, and anti-inflammatory effects that has been shown to treat different cancers *in vitro*. In this study and in contrast to monotherapy, adjuvant therapy (crocin + sorafenib) was used. This dual treatment simultaneously targeted multiple pathways and offered a better therapeutic alternative. The effects of crocin was investigated on chemically-induced HCC in male Wistar rats. Crocin was found to be involved in the mitochondrial apoptotic pathway triggering cell death and tumor suppression. This study highlights crocin's therapeutic effects against HCC both as a single biomolecule and in combination with sorafenib.

**Keywords:** Hepatocellular carcinoma, crocin, sorafenib, apoptosis, cancer, chemo resistance, chemotherapy.