



**The College of Graduate Studies and the College of Science Cordially Invite
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Master Thesis Defense

Entitled

ANTI-PANCREATIC CANCER ACTIVITY OF RHUS CORIARIA (SUMAC)

by

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Abstract

Cancer is a major health problem and is considered a chronic disease globally. Among the many different therapeutic approaches to treat cancer, it appears that many plants have promising treatment effects, and one of these plants is *Rhus coriaria*, commonly known as Sumac. Previous studies have indicated that the Sumac plant, which is used in cooking, possesses various therapeutic values, including antioxidant and antibiotic activities. This study investigates the effect of the *Rhus coriaria* ethanolic extract (RCE) against pancreatic cancer. The results demonstrate that (RCE) inhibits the proliferation and leads to the downsizing of colonies of PANC-1 and MIA -PaCa-2 cell lines in a concentration- and time-dependent manner. Low and non-cytotoxic concentrations of RCE were shown to inhibit migration, metastasis, and invasion in the PANC-1 cell line, and Annexin V staining and cell counting revealed a high number of cell death. Autophagy vacuoles were detected along with autophagy markers. Moreover, RCE was found to induce senescence and cell cycle arrest at the G1 phase, which is associated with enlarged cell morphology, and inhibit the viability of PANC-1 and MIA -PaCa-2 cells in vitro. The mechanism through which RCE exerts its effect appears to be by the degradation of cell signaling marker including mTOR, and downregulating pro-caspase 8,7, and 9. RCE also induced Beclin-1-independent autophagy, and led to cleaved PARP minimal induction of apoptosis. These findings make *Rhus coriaria* a promising alternative therapeutic candidate with anti-pancreatic cancer activity.

Keywords: *Rhus coriaria*, pancreatic cancer, apoptosis, autophagy, cell cycle;)