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Anti -proliferative and Apoptotic Effects of Selected Saudi Herbs from the Rhamnaceae, Polygonaceae, and Apocynaceae Families Against Various Cancer Cell Lines

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Abstract : Cancer is recognized as a worldwide public health concern. Therefore, there is a continuous quest to discover new effective medications with less side-effects. In recent years, researchers have shown an increased interest in medicinal plants as several plant species have shown promising biological activities. Thus, we seek to investigate three medicinal herbs that are commonly-found in the Middle Easternregion and yet have not been explored in depth, including plants belonging to the Rhamnaceae, Polygonaceae, and Apocynaceaeplant families. Initially, we investigated using three types of cancer cell lines for breast, colorectal, and liver cancers. We performed high Content Imaging (HCI)-Apoptosis Assay and ApoTox-Glo™ Triplex Assay on KAIMRC2 and HCT8 cell lines. The highest activity of HCI-Apoptosis Assay was with Calligonumcomosum and Ziziphusnummularia in ethanol, followed by Calotropis procera and Ziziphusnummularia in ethyl acetate. The IC50values for the families of Rhamnaceae, Polygonaceae, and Apocynaceae in HepG2 and HCT8 cell lines ranged from 0.089 to 9.84mg/mL and 0.080to 15.08mg/mL, respectively. Further screening was conducted on an additional two cell lines, namely the MDA-MB-231 and KAIMRC2, for selected seven extracts with the highest activity having IC50values ranged from 0.058 to0.51mg/mL and 0.029 to0.19mg/mL, respectively. Continuous scientific investigations to isolate and characterize the potent bioactive phytochemical(s) are warranted. Funding: The authors acknowledge financial support from King Abdullah International Medical Research Center (KAIMRC), Ministry of National Guard Health Affairs, Riyadh, Kingdom of Saudi Arabia. Institutional Review Board Statement: The study was approved by the Institutional Review Board of the Institutional Review Board of King Abdullah International Medical Research Center (SP21R/463/12, 24 January 2022). Acknowledgments: The authors want to express their gratitude to the College of Pharmacy (COP) at King Saud bin Abdulaziz University for Health Sciences (KSAU-HS) and King Abdullah International Medical Research Center (KAIMRC) for their continued support.

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