

## **Wild Jujube, A Welcomed Possibility for Pancreatic Cancer Treatment**

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**Background:** Pancreatic Cancer (PC) is the third leading cause of cancer mortality in the US and continues to increase in occurrence. Wild Jujube (WJ) is a commonly consumed fruit for folk medicine and is rich in phytochemicals such as tannins, flavonoids and alkaloids. Previous studies have demonstrated that WJ possesses anticancer properties. However, few studies have attempted to investigate the anticancer mechanisms of WJ. This study will investigate the effects of WJ on the growth of PC and their potential proliferative or pro-apoptotic mechanisms.

**Methods:** To determine the effect of WJ on proliferation and apoptosis using WJ extract (WJE), a clonogenic survival assay, cell proliferation kit, caspase-3 activity kit, and TUNEL staining were utilized on the PC cell line, PAN-48. To determine potential molecular mechanisms, RT-PCR and IHC were used on the same PAN-48 cell line.

**Results:** A decreased colony cell survival count, survivin staining, cyclin D staining, and TUNNEL+ cell count for WJE-treated PAN-48 demonstrated that WJE has an inhibitory effect on PC growth. This is further supported by the increase of caspase-3 activity noted for the WJE-treated group. RT-PCR for the WJE-treated group revealed that pro-proliferative molecule cyclin D and anti-apoptotic molecule survivin were significantly lower than the control group.

**Conclusion:** WJ showed inhibitory effects on the growth of PC through the downregulation of pro-proliferative molecule cyclin D and anti-apoptotic molecule survivin. Further studies may reveal the therapeutic benefits of utilizing WJ PC therapy.