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The effect of *Salix mucronata* as active compound on liver cancer

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In

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Research paper 1

Article title: Apoptotic-antiproliferative activity of *Salix mucronata* and *Triticum spelta* against human breast, lung, and liver cancer cells: A comparative study with other plant extracts containing phenolics and flavonoids

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Summary

It has been known that free radical generation is associated with cancer; therefore, finding an efficient antioxidant therapy is highly mandated. It was discovered that some plants were very effective in treating diseases caused by oxidative stress; namely, *Salix mucronata, Triticum spelta, Mentha, Apium graveolens, Coriandrum sativum, Cuminum cyminum, Senna alexandrina, Thymus vulgaris, Anethum graveolens,* and *Santalum album*. Their components with functional properties (phenolic and flavonoids) were identified, along with their ability to scavenge radicals of nitrogen and oxygen, reduce power, and chelate metals. Accordingly, human lung (A549), breast (MDA-MB 231), and liver (Huh7) cancer cells were used to assess the antioxidant-mediated antiproliferative activity of these substances. To evaluate the apoptotic activity of previous plants in the treatment of cancer cells, flow cytometry analysis and caspase activity were employed. Moreover, redox-sensitive factors' fold changes in transcriptional activation and gene expression (nuclear factor kappa (NF-κ) B and nuclear factor E2-related factor 2 (*Nrf2*), respectively) were evaluated. *Salix mucronata* and

Triticum spelta demonstrated the highest apoptosis-mediated antiproloiferative effect. Their extracts were shown to be enriched with active polyphenolic chemicals (vanillic acid, gallic acid, protochateuic acid, and pyrochatechol) according to HPLC analysis, which may be responsible for their strong antiproliferative properties. Hence, further research employing an animal model is mandatory to fully understand these plant extracts, which provide a potential natural surrogate therapy for apoptosis-mediated cancer.