

## Genomics 2021: Caspase-9 inhibitory activity of gum resin extract of *Boswellia* species: A Review Article- Raheleh Shakeri, University of Kurdistan, Iran

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Caspases, as the key effector molecules in apoptosis, are potential targets for pharmacological modulation of cell death. Increased caspase activity is often observed in the damaged cells in a number of diseases, including myocardial infarction, stroke, sepsis, Alzheimer's, Parkinson's, and Huntington's diseases. Under such conditions, inhibition of caspase activity is predicted to be therapeutically beneficial. In a search for new compounds with such potential, we tested the effect of ethanolic extract of *Boswellia* gum resin on caspase-9 activity, the initiator enzyme in the activation of the intrinsic apoptosis pathway. Recombinant caspase-9 was expressed in *Escherichia coli* and purified with Ni-NTA affinity chromatography. Caspase activity was measured in the presence of various concentrations of gum resin extract of *Boswellia* species. The extract exhibited potent inhibitory effect on caspase-9 activity. To obtain some insight into the size of the effective ingredient(s), filtration through membranes with defined sizes was performed showing that the inhibitor(s) is smaller than 5 kDa. To determine whether or not the inhibitor is stable, and the sample was heated at 70 °C for 60 minutes without any effect. We further tested dominant ingredients present in *Boswellia*, namely  $\alpha$ - and  $\beta$ -boswellic acids, and found that these are not the inhibitors of caspase-9. Further investigations are under way to identify ingredient caspase-9 inhibitors present in *Boswellia*.

Therapeutic plants are generally used to treat distinctive hazardous afflictions.

Customary home grown medication has significant job in recuperating as well as adds to the exploration on the advancement of most chemically significant metabolites from plants which are useful to deliver drugs on business scale. It is now detailed that 90% populace of agricultural nations rely upon restorative plants for essential medical services and prescriptions. Schippmann et al. expressed that generally overall almost around 50,000 plant species have been utilized to get various sorts of metabolites for restorative purposes. Sakkir et al. additionally announced that various home grown based medications frameworks of treatment were being used to treat

the various sicknesses in the Arabian Peninsula. Various local plants were utilized in the past for restorative purposes. The vast majority of the local plants are utilized for bone settings, measuring and searing. Dhofar locale of Sultanate of Oman is extremely wealthy in plant biodiversity in contrast with different pieces of the country. Therapeutic and wild plants are accessible in the slope spaces of Dhofar. Among 1206 plant types of Oman, around 800 were recorded in Dhofar area and more than 50 of them are endemic species.

*Boswellia* species tar holds around 60-80% liquor dissolvable pitch, 15-20% water solvent gum and 5-7% fundamental oil, just as polysaccharides portion and polymeric substances are likewise present in restricted degree. There are different dynamic phyto-intensifies found in *Boswellia* specie. The amount and nature of these compound changes from one animal groups to another that makes an animal varieties unique in relation to one another. The explanations for these distinctions are identified with environment, reaping time and topographical condition

The gum-sap shaped by various classes of tree identified with the sort *Boswellia* which is gathering of plants of pitch bearing conduits. Among the 29 species, class *Boswellia* (Burseraceae), sacra Flueck is the one perceived since a very long time to create fragrant gums and saps that are singed as incense. It is the lone inalienable species to the Arabian Peninsula, where it is restricted toward the southwest of Oman and the Hadramawt and Mahra locales of Yemen. Furthermore, Arabia it supports likewise in the Horn locale of Somalia, which is today the most basic place for the production of a gum frankincense perceived as "bejo". The frankincense is set up from lopsided lumps of smooth to yellowish earthy colored latex emanated by the stem of the plants and was recently utilized remedially and for delousing by the Egyptians. Since antiquated period, Yemen and Oman delivered this kind of gum, and its exchange expanded immensely. As per authentic sources, 3,000 tons/year materials like gum and gum identified with pith trade these countries to move the nations like Iran and India.