# Poplar tree leaf bud extract could fight skin aging

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Antioxidants are popular anti-aging ingredients in skin creams, and now scientists are reporting a new source of these healthful substances — leaf buds of poplar trees. Their study appears in the ACS' *Journal of Agricultural and Food Chemistry*.

Xavier Vitrac and colleagues note that there's a long history of using poplar buds to treat various health problems, such as colds, sinusitis, sunburn and arthritis. A substance found in beehives that is made from poplar buds (called propolis) also appears to have similar disease-fighting benefits. Propolis' effects seem to be due to poplar bud compounds, but very little is known about these substances. To see whether poplar buds are a good source of antioxidants for skin creams, the researchers decided to test an extract from the buds.

The group found that poplar bud extract had moderate antioxidant activity, and it demonstrated anti-aging effects on cells in the laboratory. "The collective antioxidant properties and transcriptional effect of this extract suggest potential anti-aging properties which could be utilized in cosmetic and nutraceutical formulations," the scientists say.

**More information:** "Phenolic Composition and Antioxidant Properties of Poplar Bud (Populus nigra) Extract: Individual Antioxidant Contribution of Phenolics and Transcriptional Effect on Skin Aging" *J. Agric. Food Chem.*, 2011, 59 (9), pp 4527–4536 DOI: 10.1021/jf104791t

**Abstract**

The Populus species possess great potential for therapeutical applications, especially for their known anti-inflammatory properties. The antioxidant properties of propolis, a hive product collected by honey bees mainly from poplar bud exudates, suggest that poplar buds also possess antioxidant properties. Here is reported the characterization of the antioxidant properties of an aqueous poplar bud (Populus nigra) extract. It presented a high total phenolic content, and moderate antioxidant properties as determined by ORAC assay. The main phenolic compounds identified were phenolic acids and flavonoid aglycons. These phenolic compounds were analyzed by ORAC assay for their individual antioxidant activity, in order to determine the major contributors to the total antioxidant activity of the extract. Thanks to their high antioxidant activity, caffeic and p-coumaric acids were identified as the major antioxidant components. Representing only 3.5% of its dry weight, these compounds represented together about 50% of the total antioxidant activity of the extract. The antioxidant properties of poplar bud extract and the phenolic compounds identified were also analyzed by cellular antioxidant activity assay (CAA), which was weakly correlated with ORAC assay. The transcriptional effect of poplar bud extract on skin aging was evaluated in vitro on a replicative senescence model of normal human dermal fibroblasts, using a customized DNA macroarray specifically designed to investigate skin aging markers. Among the detected genes, poplar bud extract significantly regulated genes involved in antioxidant defenses, inflammatory response and cell renewal. The collective antioxidant properties and transcriptional effect of this extract suggest potential antiaging properties which could be utilized in cosmetic and nutraceutical formulations.

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