

## AQUEOUS EXTRACT OF CORNUS MAS L. ENCAPSULATED IN B-CYCLODEXTRIN AND ANTI-OXIDANT AND ANTI-INFLAMMATORY ACTIVITY

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### ABSTRACT

Cornelian cherry (*Cornus mas L.*) is a valuable source of phenolic antioxidants and has been used over the years in folk medicine, due to its pro-health potency. This potency is mainly attributed to the presence of high amounts of polyphenols, including anthocyanins, than in any other fruits <sup>[1]</sup>. The known beneficial properties include mitigation of influenza and angina symptoms, antioxidant and anti-inflammatory properties, antigenotoxic and neuroprotective activity without toxicity, and atherosclerotic properties<sup>[2]</sup>. Exemplification of the benevolent effects of Cornus extracts is reflected abundantly in the human central nervous system, which is particularly vulnerable to oxidative stress, in view of the fact that neuronal membranes contain highly susceptible poly-unsaturated fatty acids, the antioxidant defense mechanisms are comparatively weak, and oxygen consumption is relatively high <sup>[3]</sup>.

Our goal in this particular area of molecular bioengineering was to uncover neuroprotective properties that the specific extracts might exhibit on neuronal tissues, thereby justifying their incorporation in the human diet. To that end, in vitro biological investigation of the *Cornus mas L.* extract molecular potency in counteracting pathological aberrations was pursued in our Lab, thereby leading to the determination of the biotoxicity profile. The brain cell lines used included physiological mouse neuronal (N2a) and pathological human neuroblastoma (SH-SY5Y) cell lines. The in vitro studies, involving the above cell cultures, were carried out to derive a credible biotoxicity profile of the extracts, further supplemented by antioxidant and anti-inflammatory work, involving specific genetic targets. To that end, in-depth studies included a) viability assays, b) morphology, and c) chemotacticity determination in a time- and concentration-dependent manner. Based on the so emerging biotoxicity profile, subsequent molecular biological work focused on antioxidant gene level expression and anti-inflammatory factor properties in an effort to unravel and identify possible effects linked to the maintenance of antioxidant-prooxidant balance in human physiology. The collective results reveal that the extracts are atoxic, up to very high concentrations (1 mg/mL), containing high amounts of polyphenolics, thereby justifying further use in nutraceutical formulations in human diet, benefiting long term human health.

**KEYWORDS:** Flavonoids, Quercetin, Metal complexes, Antioxidant activity

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