

Phytochemical Profiling, Anti-inflammatory, Anti-oxidant and In-silico Approach of *Cornus macrophylla* Bioss (Bark).

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Abstract: *Cornus macrophylla* (*C. macrophylla*) is from the family cornaceae. It is locally known as khadang and is used for the treatment of different diseases such as analgesic, tonic, diuretic, malaria, inflammation, allergy, infections, cancer, diabetes, and as a lipid peroxidative. The crude extract and different fractions of *C. Macrophylla* were evaluated by gas chromatography and mass spectroscopy (GC-MS), which identified the most potent bioactive phytochemicals. The antioxidant ability of *C. macrophylla* was studied by 2,2'-azino-bis-3-ethylbenzthiazoline-6-sulfonic acid (ABTS) and 1,1 diphenyl-2-picryl-hydrazyl (DPPH) methods and in vitro anti-inflammatory activity was assessed by using COX-2 (Cyclooxygenase-2) and 5-LOX (5-lipoxygenase) assays. The molecular docking was carried out by using molecular operating environment (MOE) software. The GC-MS study of *C. macrophylla* confirmed forty-eight compounds in ethylacetate (Et.AC) fraction and revealed that Et.AC fraction was the most active fraction. The antioxidant ability of the Et.AC fraction showed an IC₅₀ value of 09.54 µg/ml and 7.8 µg/ml against ABTS and DPPH assay respectively. Among all the fractions of *C. macrophylla*, Et.AC showed excellent activity against COX-2 and 5-LOX. The observed IC₅₀ values were 93.35 µg/ml against COX-2 and 75.64 µg/ml for 5-LOX respectively. Molecular docking studies supported these in vitro results and confirmed the anti-inflammatory potential of *C. macrophylla*. *C. macrophylla* has promising potential as a source for the development of new drugs against inflammation in the future.

Keywords: GC-MS; anti-inflammatory; antioxidant; *Cornus macrophylla*;

