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Research Paper

Cnidoscolus chayamansa Mc Vaugh, an important antioxidant, anti-inflammatory and cardioprotective plant used in Mexico

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Abstract

Ethnopharmacological relevance

Cnidoscolus chayamansa Mc Vaugh (Euphorbiaceae) is commonly known as 'chaya' in Central America. In South East Mexico, because of its high nutritional values, is an important part of the diet of many indigenous communities. Chaya is also used as a traditional remedy for the treatment of diabetes, rheumatism, gastrointestinal disorders and inflammation-related diseases. Although *Cnidoscolus chayamansa* is one of most used and valued medicinal plants, only few studies on documenting its pharmacological properties can be found.

Materials and methods

Dried leaves of *Cnidoscopus chayamansa* were subjected to a successive maceration using Hex, EtOAc and EtOH. The antioxidant activities of the extracts were tested using the DPPH radical scavenging, Ferric reducing/antioxidant power and total phenolic content assays. To determine the anti-inflammatory activity, the TPA-induced mouse ear edema and the carrageenan-induced mouse paw edema assays were used. The cardioprotective effects of the EtOH extract was determined using the ischemia/reperfusion (I/R) rat model. Finally, the acute toxicity was determined using Lorke's method.

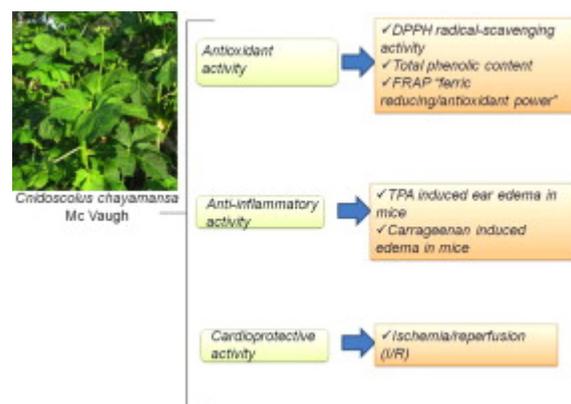
Results

The results showed a similar anti-inflammatory activity ($\approx 30\%$) for all extracts but only the EtOAc extract showed relevant activity when applied intraperitoneally. When tested for their antioxidant activity none of the extracts showed a significant activity suggesting that the anti-inflammatory activity is not related to a direct free radical scavenging of the extracts. Additionally, the EtOH extract showed a strong cardioprotective effect at 500 mg/kg when given orally. Both the EtOAc and the EtOH extract have a $LD_{50} > 5$ g/kg, confirming their safety in acute oral administration.

Conclusions

All these results are relevant for a better understanding of the therapeutic used of *Cnidoscopus chayamansa* in the Mexican traditional medicine and highlights its cardioprotective potential.

Graphical abstract



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Keywords

Antioxidant; Anti-inflammatory; Cardioprotective; Acute toxicity; *Cnidoscopus chayamansa*; Mexican traditional medicine

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