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ANTINOCICEPTIVE AND ANTIINFLAMMATORY POTENTIAL OF DICHLOROMETHANE: METHANOLIC LEAF EXTRACTS OF *Caesalpinia volkensii* AND *Maytenus obscura* IN ANIMAL MODELS


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ABSTRACT

Caesalpinia volkensii and *Maytenus obscura* are specialised plants that grow in Mbeere County of Eastern region of Kenya. Species belonging to genus maytenus are widely used in folk medicine such as antiseptic, antiasthmatic, fertility-regulating agents, antitumor and antiulcer. The leaf decoction of *Caesalpinia volkensii* is taken to fight pains during pregnancy. Pregnant women take powdered pods dissolved in water to relieve stomach-ache. They are also used to treat gonorrhoea and bilharzia. Seeds are used to cure stomach ulcers. Flower buds are crushed and applied to the eye to treat eye problems. This study is designed to evaluate the antinociceptive and anti-inflammatory activity of *Caesalpinia volkensii* and *Maytenus obscura* plants. In order to assess the antinociceptive and anti-inflammatory effects, formalin induced writhing response model and carrageenan induced paw edema model will be used in and Wister albino rats and mice. In both cases, leaves extract will be administered (2gm/kg body weight) and the obtained effects will be compared with commercially available antinociceptive and anti-inflammatory drug Diclofenac sodium (15mg/kg body weight). DMSO (2ml/kg body weight) will be used as a control for the study. The plant sample of the leaves will be dried at room temperature under shade for one month and ground into powder. Two hundred grams of the powdered leaves material will be soaked to DCM and ethanol in the ratio of 1:1 for 3 h. The extract will be filtered and concentrated using a rotator evaporator. The experimental rats and mice will be divided into four groups; normal group, diseased, control and experimental group. Pain will be induced using formalin while inflammation will be induced using carrageenan. The experimental group will be treated with predetermined quantities of extracts of both plant leaves. The dichloromethane:methanolic extract of leaves of the plant will be evaluated for significant antiinflammation and antinociceptive activities using several experimental models in rats and mice when compared with the standard conventional drugs. The experimental data will be analyzed using paired t-test and analysis of variance (ANOVA). Should the claimed effectiveness be validated by this study, the plant will be recommended for further studies as a bio source into producing standardized herbal formulation more effective in the treatment of pain and inflammation with less toxic and less costly than current synthetic drugs.



Caesalpinia volkensii Harms

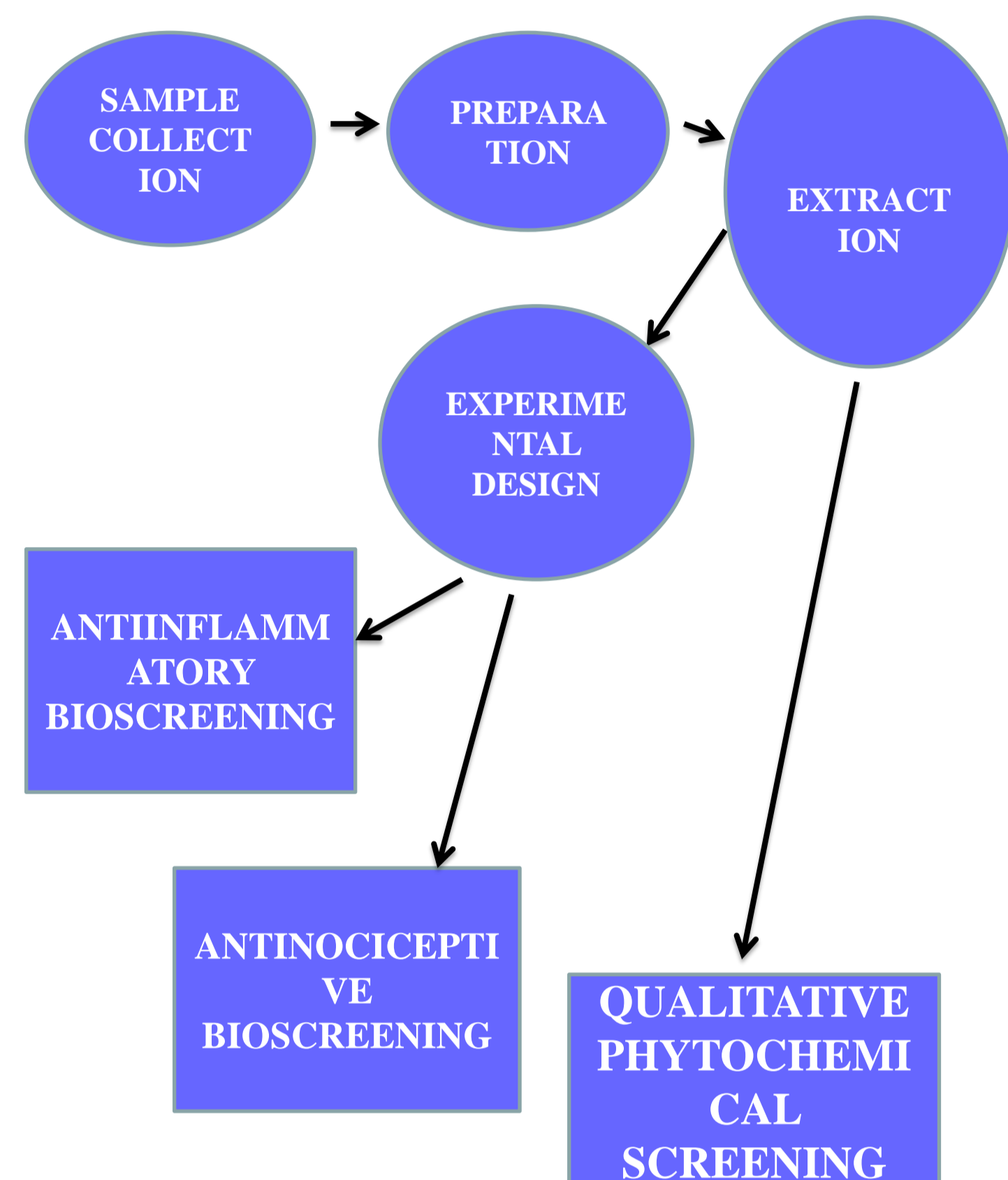


Maytenus obscura (A. Rich.) Cuf.

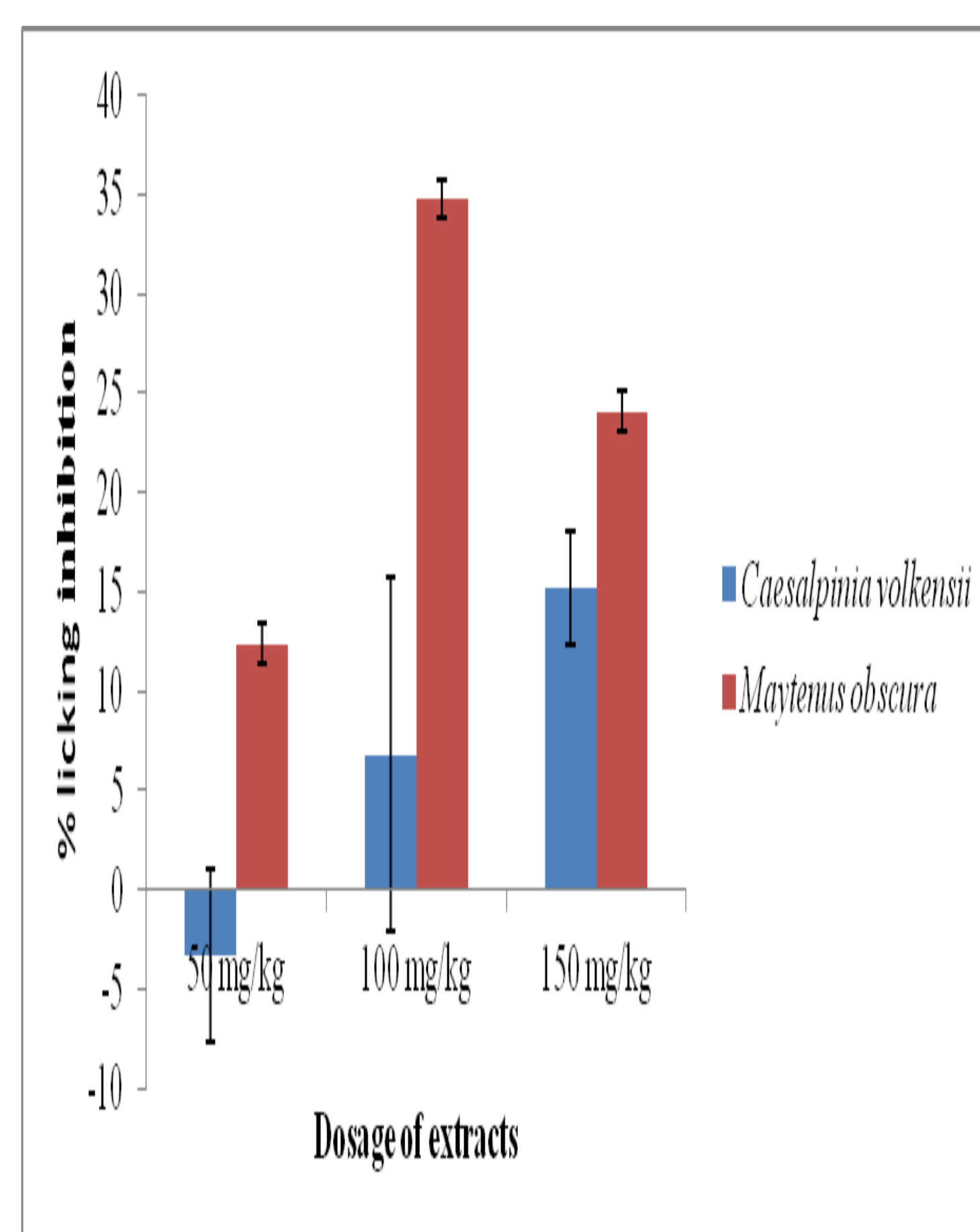
Specific objectives

- To determine antinociceptive activities of DCM: Methanolic leaf extracts of *C. volkensii* and *M. obscura* in rats models.
- To determine anti-inflammatory activities of DCM: Methanolic leaf extracts of *C. volkensii* and *M. obscura* on carrageenan induced paw edema in mice models.
- To determine the qualitative phytochemical composition of DCM: Methanolic leaf extracts of *C. volkensii* and *M. obscura*.

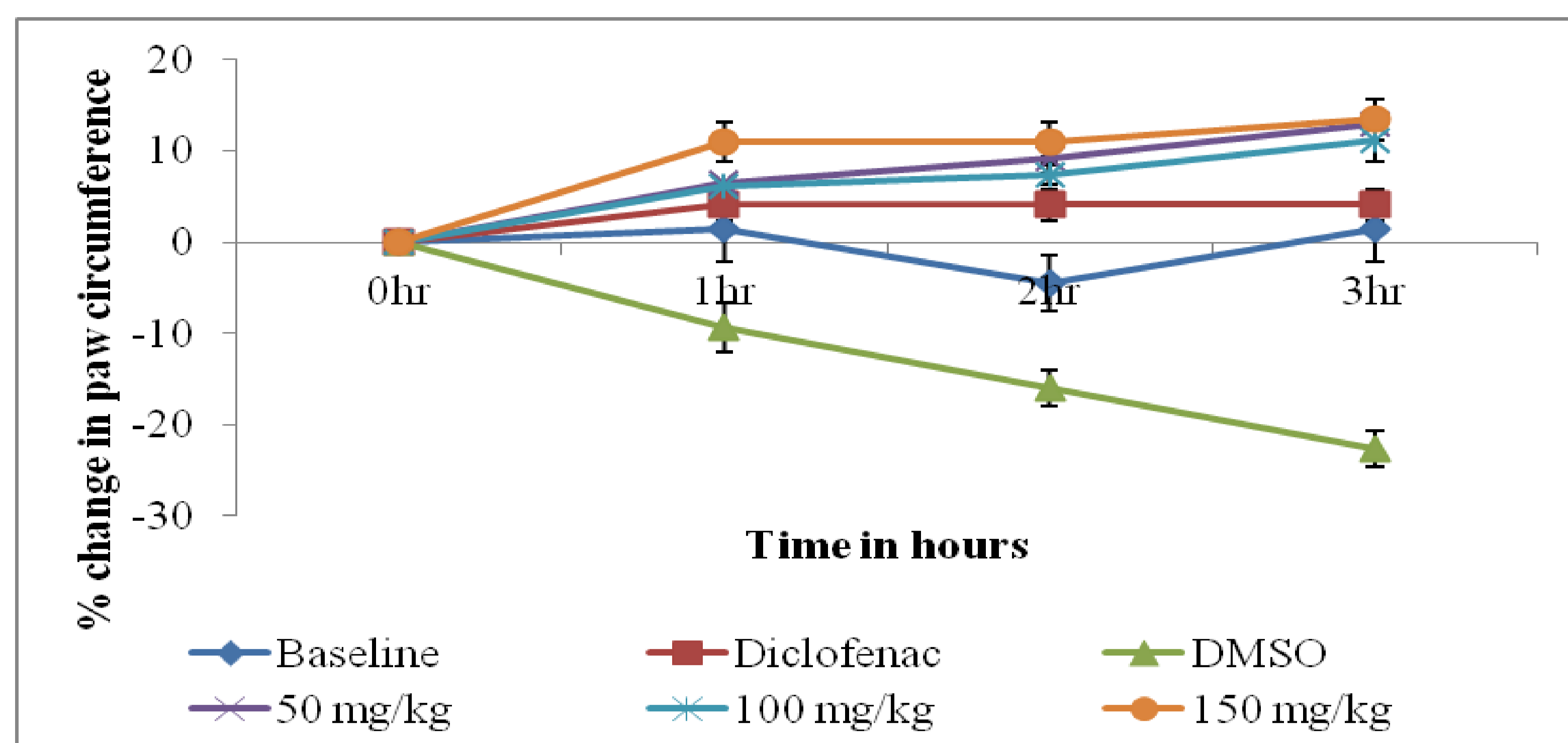
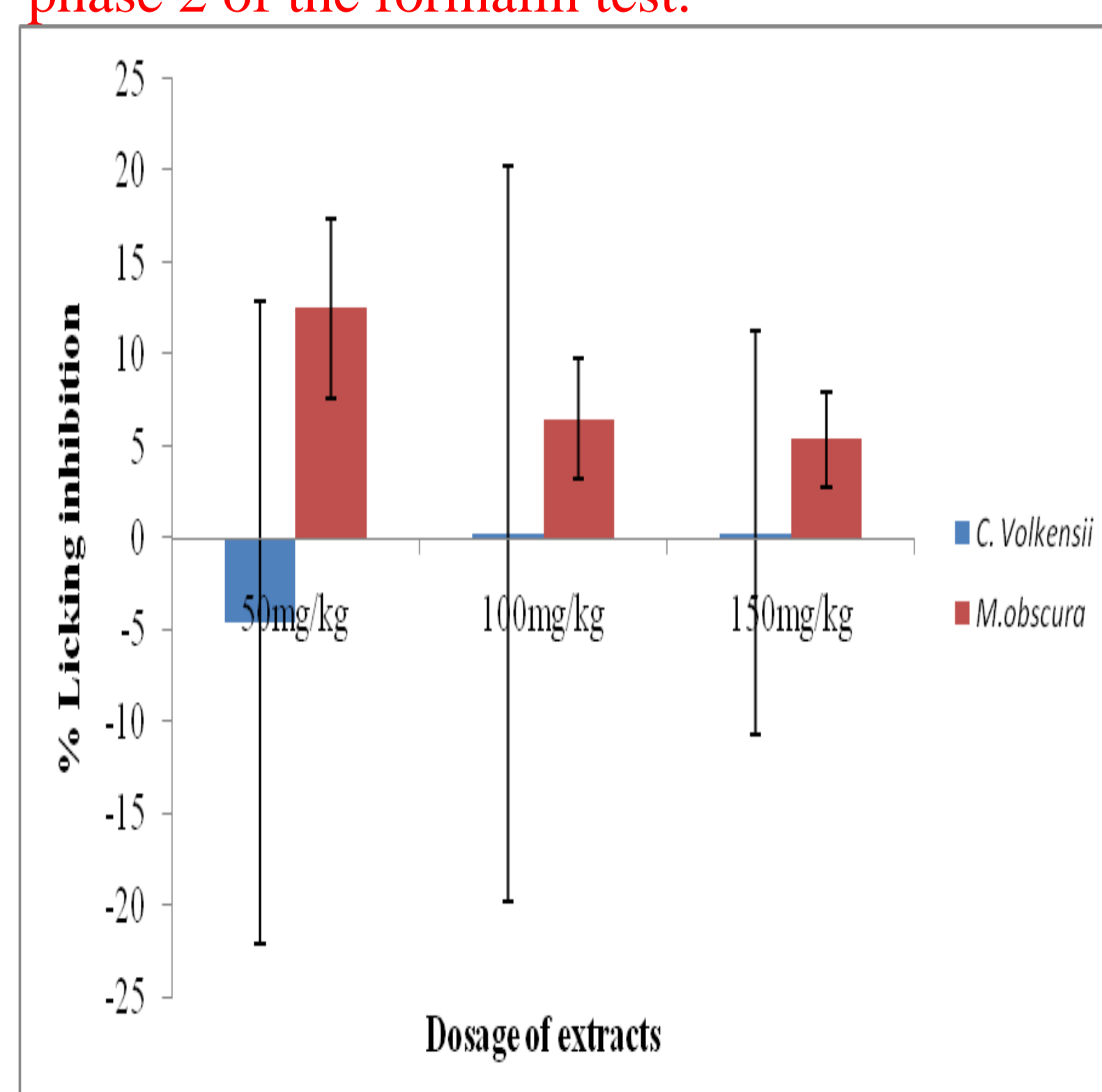
Materials and methods



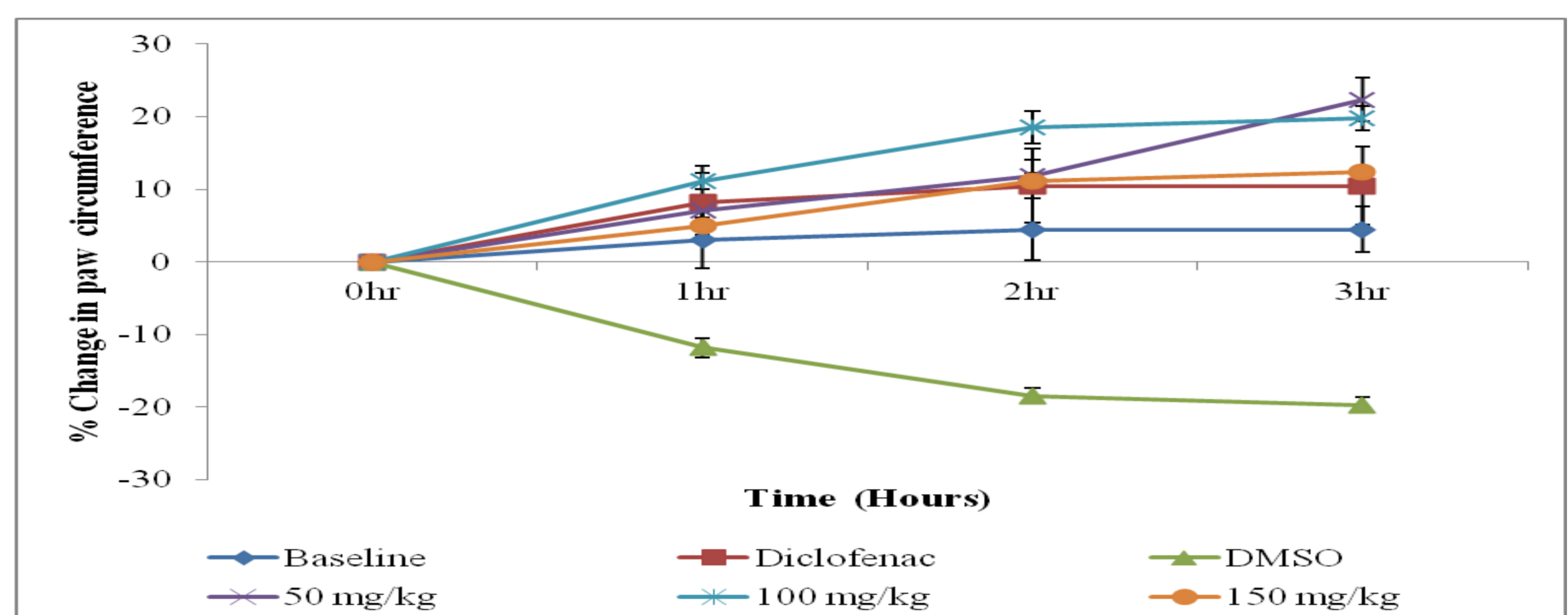
Percent licking inhibition by DCM: Methanolic leaf extracts of *C.volkensii* and *M. obscura* in phase 1 of the formalin test.



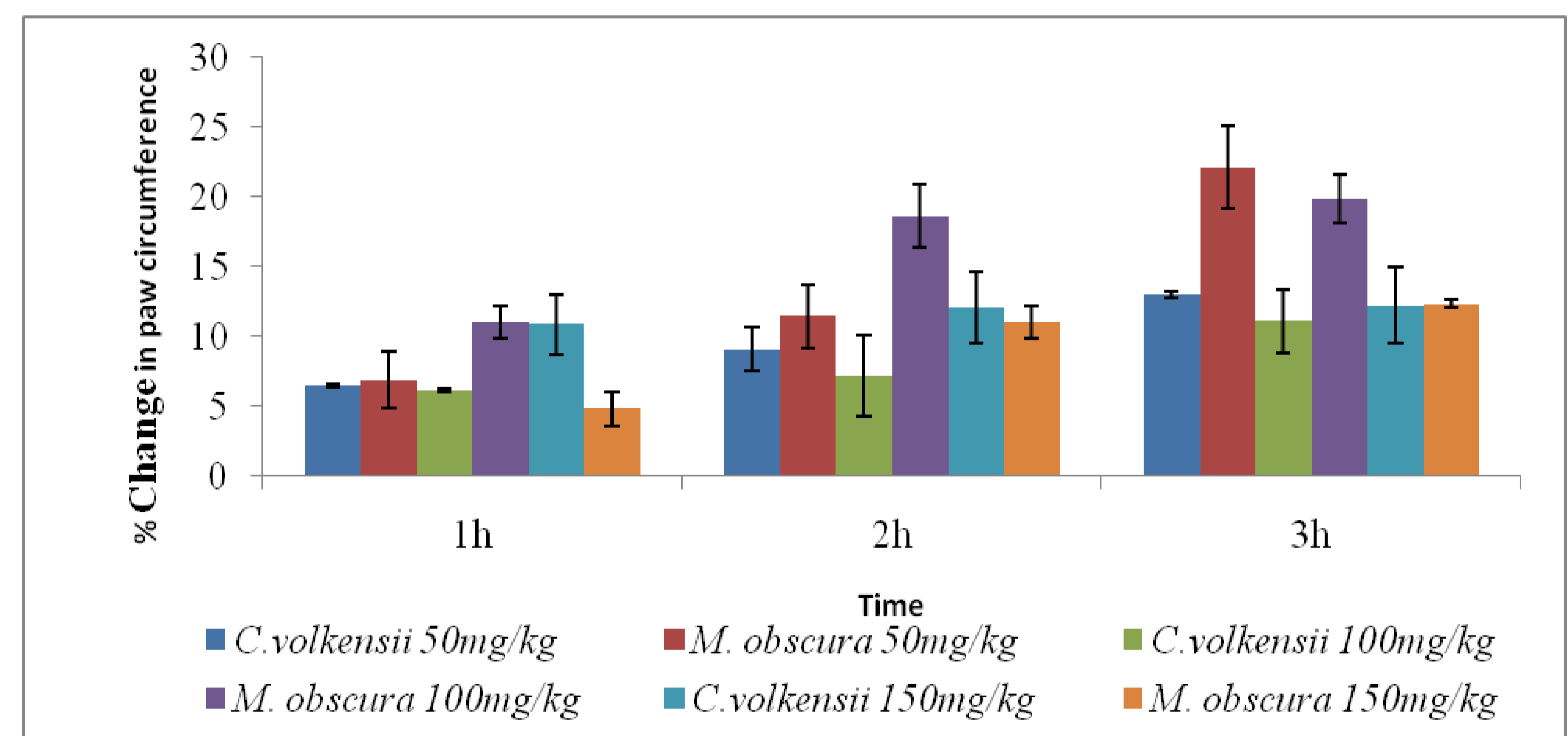
Percent licking inhibition by DCM: Methanolic extracts of *Caesalpinia volkensii* Harms and *Maytenus obscura* (A. Rich.) in phase 2 of the formalin test.



Effects of *Maytenus obscura* (A.Rich.) on the percent change in carrageenan induced inflammation in mice.



Effects of DCM: Methanolic leaf extracts of *Caesalpinia volkensii* Harms on carrageenan induced inflammation in mice.



Comparison of the percent change in carrageenan induced inflammation DCM: Methanolic leaf extracts of *C. volkensii* and *M. obscura* at various hours of the test period.

Phytochemistry of the *Caesalpinia volkensii* and *Maytenus obscura*.

Classes of compounds	<i>Caesalpinia volkensii</i>	<i>Maytenus obscura</i>
Alkaloids	-	-
Flavonoids	+	-
Steroids	+	-
Phenolics	+	+
Terpenoids	-	+
Saponins	-	+
Cardiac glycosides	-	-

Present phytochemicals are denoted by (+) sign, absent phytochemicals are denoted by (-) sign.

Conclusions

- C. volkensii* and *M. obscura* are endowed with potent antinociceptive and antiinflammatory properties
- It's possible to find opioid analgesics as well as peripherally acting analgesics
- C. volkensii* and *M. obscura* extracts contain classes of phytochemicals previously observed to contribute to antinociceptive and antiinflammatory activities
- The present study scientifically confirms the traditional use of the plant for management of pain and inflammation conditions
- The null hypothesis are hence rejected