

INTRODUCTION

Rheumatoid arthritis (RA) is a systemic autoimmune disease that clinically manifests as joint pain, stiffness and swelling (Hussein *et al.*, 2016). RA is the commonest form of chronic inflammatory arthritis, characterized by synovial inflammation (Shrivastava and Pandey, 2013) and hyperplasia, autoantibody production (rheumatoid factor and anti-citrullinated protein antibody [ACPA]), cartilage and bone destruction (McInnes and Shett, 2011).

OBJECTIVES

The subject of our study was to evaluate anti-arthritic activities of *Stachys circinata* dichloromethane extract.

MATERIALS AND METHODS

Plant material

Aerial parts of *Stachys circinata* were collected from Djebel El-Ouahch-Constantine (North Eastern Algeria) in April 2013 during the flowering stage. The extract concentration 150 mg/kg was used.

Animals

Adult male Albinos mice (2,5 -3 old months), weighing (28 -38g).

Methods

100 µl of formalin (2%) was injected into the sub-plantar of the right hind paw and the edema size was measured by a digital caliper during a period of 10 days following the protocol of formalin-induced arthritis (Mazumder *et al.*, 2012), at the end of the experiment, blood was withdrawn from the retro-orbital plexus for the hs-CRP(C-reactive protein) and anti-CCP (anti- cyclic citrullinated peptide) dosage.

RESULTS AND DISCUSSIONS

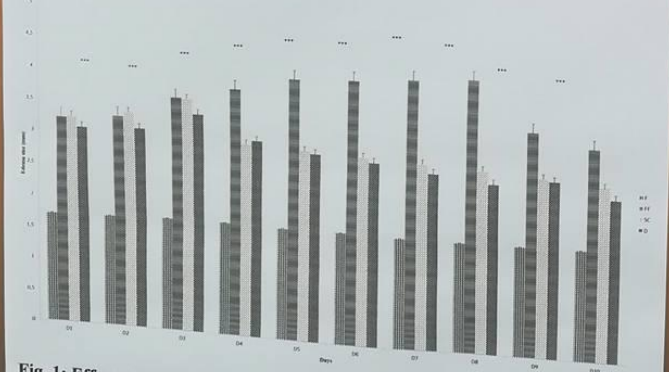


Fig. 1: Effect of *Stachys circinata* on the formalin induced mice right hind paw edema of the four groups in each day during the experiment period.

The results showed that the dichloromethane extract of *Stachys circinata* at a dose of 150 mg/kg decrease significantly the edema size (P=0,000) compared to the control, this result agrees with those of Mazumder *et al.*, 2012 and those of Vasudevan *et al.*, 2006.

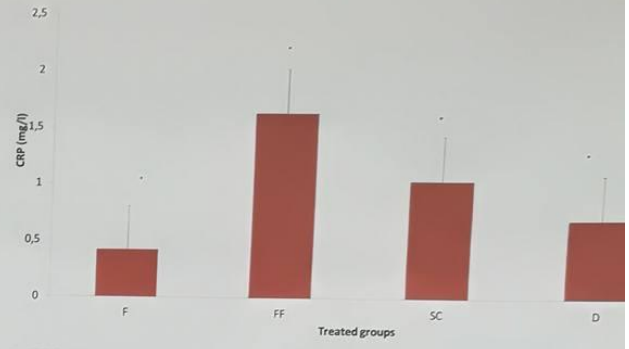


Fig. 2: Effect of the treatment by *Stachys circinata* on inflammatory marker (CRP blood level) during formalin induced arthritis. Results are shown as mean ± SEM (n=5); ***p<0,05.

The results showed that *Stachys circinata* extract significantly decreased the CRP levels compared to the control group, this result agrees with those of Kehili *et al.*, 2016.

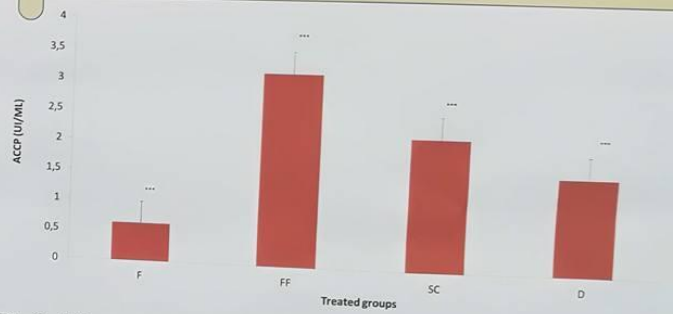


Fig. 3: Effect of the treatment by *Stachys circinata* on ACCP blood level during formalin induced arthritis. Results are shown as mean ± SEM (n=5); ***p<0,001.

The results showed that *Stachys circinata* extract significantly decreased the anti-CCP values (P=0,000) compared to the control group.

CONCLUSION

This study revealed that *Sachys circinata* extract (150 mg/kg) possess anti-arthritic activity that is mediated by its anti-inflammatory effects on some parameters such us CRP and Anti-CCP.

REFERENCES

- Hussein MS., Abdel Ghany SE., Elashkar DS., Rabea MY., Nosair NA. (2016) Anti-CCP hs (high sensitive) in Egyptian rheumatoid arthritis patients associate with chronic hepatitis C virus infection. *The Egyptian Rheumatologist*, 38: 15-20.
- Shrivastava AK., Pandey A. (2013). Inflammation and rheumatoid arthritis. *Physiol Biochem*, 69: 335-47
- McInnes I.B., Schett G. (2011). The Pathogenesis of Rheumatoid Arthritis. *The New England Journal of Medicine*, 365:2205-19
- Mazumder P. M., Mondal A., Sasmal D., Arulmozhi S., Rathinavelusamy P. (2012). Evaluation of antiarthritic and immunomodulatory activity of *Barleria lupulina*. *Asian Pacific Journal of Tropical Biomedicine*, S1400-S1406
- Vasudevan M., Gunnam KK., Parle M. (2006). Antinociceptive and Anti-inflammatory Properties of *Daucuscarota* Seeds extract. *J Health Sci*, 52: 598-606.
- Kehili HE., Zerizer S., Beladjila KA., Kabouche Z. (2016). Anti-inflammatory effect of Algerian date fruit (*Phoenix Dactylifera*). *Food* <http://dx.doi.org/10.1080/09540105.2016.1177777>