Latin American Journal of Pharmacy
(formerly *Acta Farmacéutica Bonaerense*)
Lat. Am. J. Pharm. **42** (7): 1428-34 (2023)

Received: March 25, 2023
Accepted: April 18, 2023

Effect of *Achyranthes aspera* Leaf Extract on Lipid Peroxidation, Antioxidant Status, Hepatic and Inflammatory Markers in Adjuvant-Induced Arthritis in Rats

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SUMMARY. **We investigated the effect of *Achyranthes aspera* leaf extract on Freund's adjuvant-induced arthritis in rats. To develop arthritis, Complete Freund's adjuvant (CFA) (100 μL) was injected intradermally into the right hind paw of Swiss albino Wistar rats. *A. aspera* was orally administered to arthritic animals for 8 days (11th to 18th days) after adjuvant injection. *A. aspera* was examined by evaluating hepatic indicators (AST, ALT and ALP), oxidative stress markers (TBARS and LOOH) and antioxidants (SOD, CAT, GPx and GSH) in serum, plasma and spleen tissue as well as inflammatory markers (TNF-α, IL-6, IL-10, COX-2, NF-κB, IκB-α, IFN-γ, IL-1β, iNOS) genes expression by PCR array in CFA-induced rats. The activities/levels of hepatic, lipid peroxidative and inflammatory markers were dramatically enhanced in adjuvant-induced arthritic rats, while antioxidant enzymes were significantly lowered. Oral administration of *A. aspera* reversed these biochemical alterations observed in CFA-induced rats. Our results demonstrated that *A. aspera* possesses antiinflammatory and anti-arthritic activity on CFA-induced arthritic rats.**

RESUMEN. Investigamos el efecto del extracto de hoja de *Achyranthes aspera* sobre la artritis inducida por adyuvante de Freund en ratas. Para desarrollar artritis. Se inyectó por vía intradérmica adyuvante completo de Freund (CFA) (100 μL) en la pata trasera derecha de ratas Wistar albinas suizas. A. aspera se administró por vía oral a animales artríticos durante 8 días (días 11 a 18) después de la inyección del adyuvante. A. aspera se examinó evaluando indicadores hepáticos (AST, ALT y ALP), marcadores de estrés oxidativo (TBARS y LOOH) y antioxidantes (SOD, CAT, GPx y GSH) en suero, plasma y tejido del bazo, así como marcadores inflamatorios (TNF -α, IL-6, IL-10, COX-2, NF-κB, IκB-α, IFN-γ, IL-1β, iNOS) expresión de genes mediante matriz de PCR en ratas inducidas por CFA. Las actividades/niveles de los marcadores hepáticos, peroxidativos de lípidos e inflamatorios aumentaron drásticamente en ratas artríticas inducidas con adyuvante, mientras que las enzimas antioxidantes se redujeron significativamente. La administración oral de A. aspera revirtió estas alteraciones bioquímicas observadas en ratas inducidas por CFA. Nuestros resultados demostraron que *A. aspera* posee actividad antiinflamatoria y antiartrítica en ratas artríticas inducidas por CFA.

KEY WORDS: Achyranthes aspera, adjuvant, antioxidants. arthritis, inflammation.

# Minjie Yang and Hongbo Yu are co-first aothors, they contributed equally to this work.

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ISSN 0326 2383 (printed ed.)
ISSN 2362-3853 (on line ed.)