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# Anti-Ulcerative colitis potential of the hydroethanolic extract of *Xylopia aethiopica* in rats.

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## Introduction

Ulcerative colitis is a chronic progressive inflammatory disease of the large intestine, that affects largely the rectum and extends proximally within the colon, producing non-transmural inflammation [1]. Recent mortality data reveals a 10% increase in intermediate and long-term mortality among ulcerative colitis patients with an even higher percentage in patients diagnosed in childhood or adolescence [2], clearly highlighting the need for novel therapies. Medicinal plants are excellent sources of lead compounds that may provide new and cost-effective treatment options. One such plant known for its beneficial effects is *Xylopia aethiopica*, a tropical evergreen plant used traditionally for bronchitis, asthma, arthritis and rheumatism in Ghana, Nigeria and Cameroon [3]. The aim of this study was to determine the effect of the hydroethanolic extract of the dried fruits of of *Xylopia aethiopica* (XAE) on acetic acid-induced ulcerative colitis.

## Methodology

Sprague Dawley rats were randomly grouped. The disease and non-disease control rats received saline orally for 8 days, another group received sulphasalazine 500 mg kg-1 and three other groups received 30, 100 or 300 mg kg$^{-1}$ of XAE. On the 4$^{th}$ day, colitis was induced in all groups except in the non-disease control rats, by intrarectal administration of 1 ml 4%v/v acetic acid [3]. Animals were sacrificed on day 8 and parameters such as microscopic and macroscopic colon damage, argyrophylic nucleolar organiser region (AgNOR) staining, haematology, mast cell proliferation, enzyme activity and lipid peroxidation assessed.

## Results

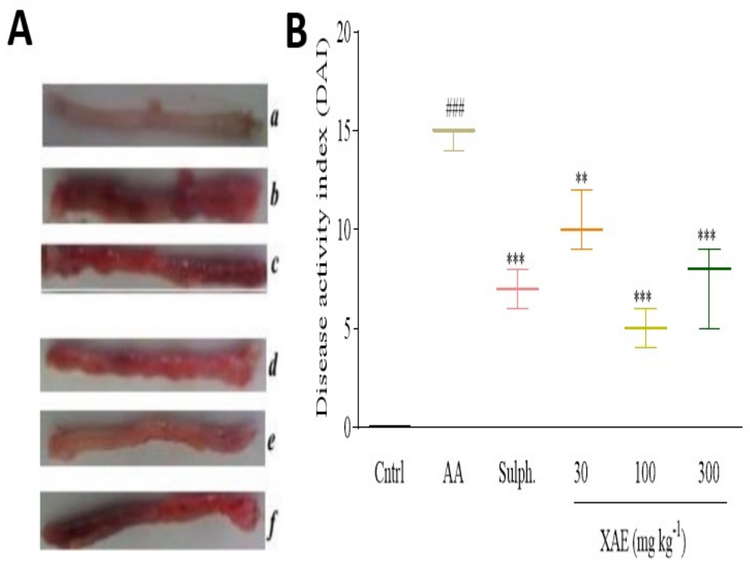


Fig 1. Effect of *Xylopia aethiopica* on acetic acid-induced colonic damage in rats. XAE-treated animals showed significant improvement of the disease profile macroscopically (A). The calculated DAI was significantly decreased when compared with the acetic acid-treated group at 30, 100 and 300 mg kg$^{-1}$ (B)

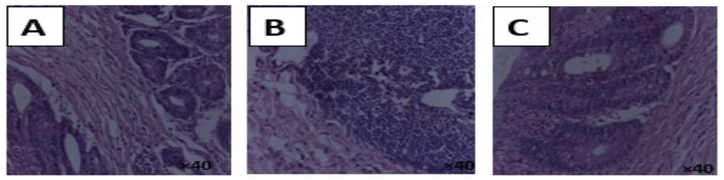


Fig 2. Histopathology of the acetic acid-induced colitis in rats. Respectively at 30, 100, 300 mg kg$^{-1}$, XAE decreased the gross mucosal injury caused by the acetic acid. There was decreased epithelial cell loss with reduced granulomatous inflammation

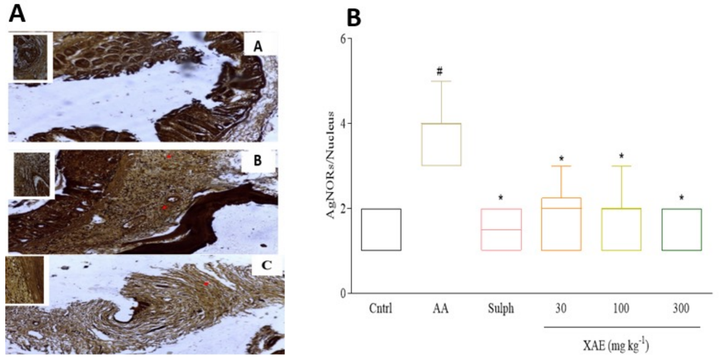


Fig 3. AgNORs per nucleus in *Xylopia aethiopica* extract acid-treated rats. There were observable (A) and quantitatively (B) significant (P < 0.0001) reduction in the expression of AgNORs in the XAE-treated groups at 30, 100 and 300 mg kg$^{-1}$, compared to disease control.

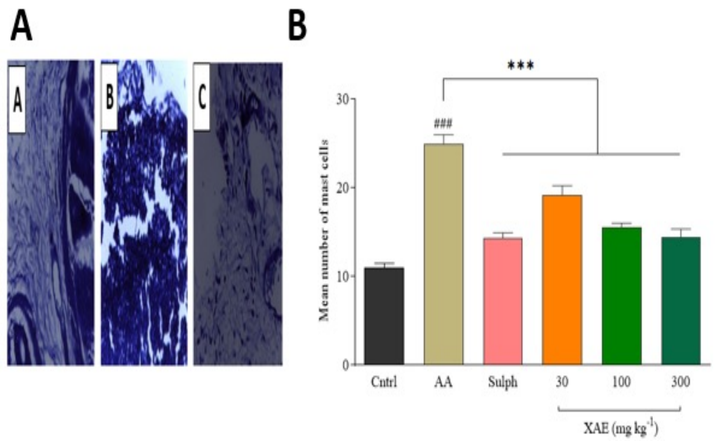


Fig 4. Mast cell count in colon of acetic acid-induced ulcerative colitis rats. XAE-treated rats showed a reduced mucosal mast cell infiltration in the range of 30 - 300 mg kg$^{-1}$ respectively (A) with significant reduction in the mast cell count when compared with the disease control rats (B).

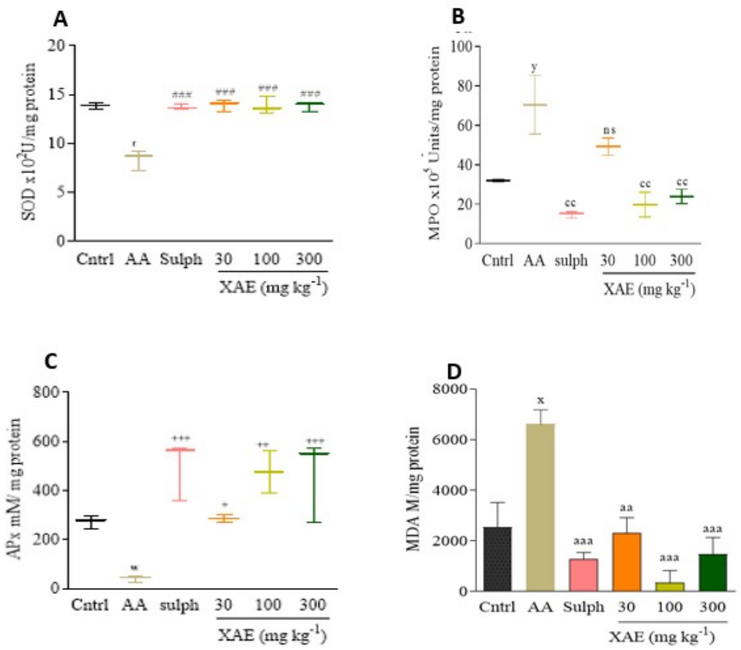


Fig 5. Assay of superoxide dismutase, myeloperoxidase, ascorbate peroxidase and malondialdehyde in acetic acid-induced ulcerative colitis rats. Treatment with XAE resulted in significant (P < 0.0001) increase in the activity of superoxide dismutase while the activity of myeloperoxidase and subsequent production of malondialdehyde were inhibited.

## Conclusion

The hydroethanolic fruit extract of *Xylopia aethiopica* is effective in acetic acid-induced ulcerative colitis. *X. aethiopica* fruit extract decreases influx of mast cells to the colonic segment and also inhibited AgNORs/nucleus ratio to levels comparable with non-disease control rats. It also inhibits lipid peroxidation by decreasing the production of malondialdehyde.

## Acknowledgements

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## References

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