Fraction from Calliandra portoricensis Reduces 7,12-Dimethylbenz(a)Anthracene-Induced Mammary Tumors in Wistar Rats

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BACKGROUND & OBJECTIVE

- Globally, mammary gland tumour is the leading cause of cancer-based mortality in women without discrimination to ethnicity and race
- Surgery, radiotherapy, hormonal therapy and chemotherapy are examples of treatment options for mammary gland tumours but they mostly come with undesirable side effects.
- Natural products exhibit biological properties that are widely used for medical applications
- Calliandra portoricensis (CP), a woody shrub has been reported to have numerous pharmacological activities including antimicrobial and antiangiogenic.

The objective is to investigate the ameliorative effect of CP on DMBA-induced mammary gland tumour in female rats.

MATERIALS AND METHODS

- **Induction of Mammary tumour:** Administration of (7,12 Dimethylbenz(a)anthracene) DMBA (50mg/kg i.p.) to the female Wistar rats.
- **Inflammatory markers:** NO and MPO were determined by spectrophotometry and IL-1β by ELISA.
- **Antioxidant parameters**: SOD, CAT, GPx Lipid Peroxidation (LPO) and GSH were determined by spectrophotometry.
- **Apoptotic markers:** Caspase 3, Caspase 9 and BAX were determined by ELISA
- **Histology:** H&E staining of mammary tissues.

RESULTS

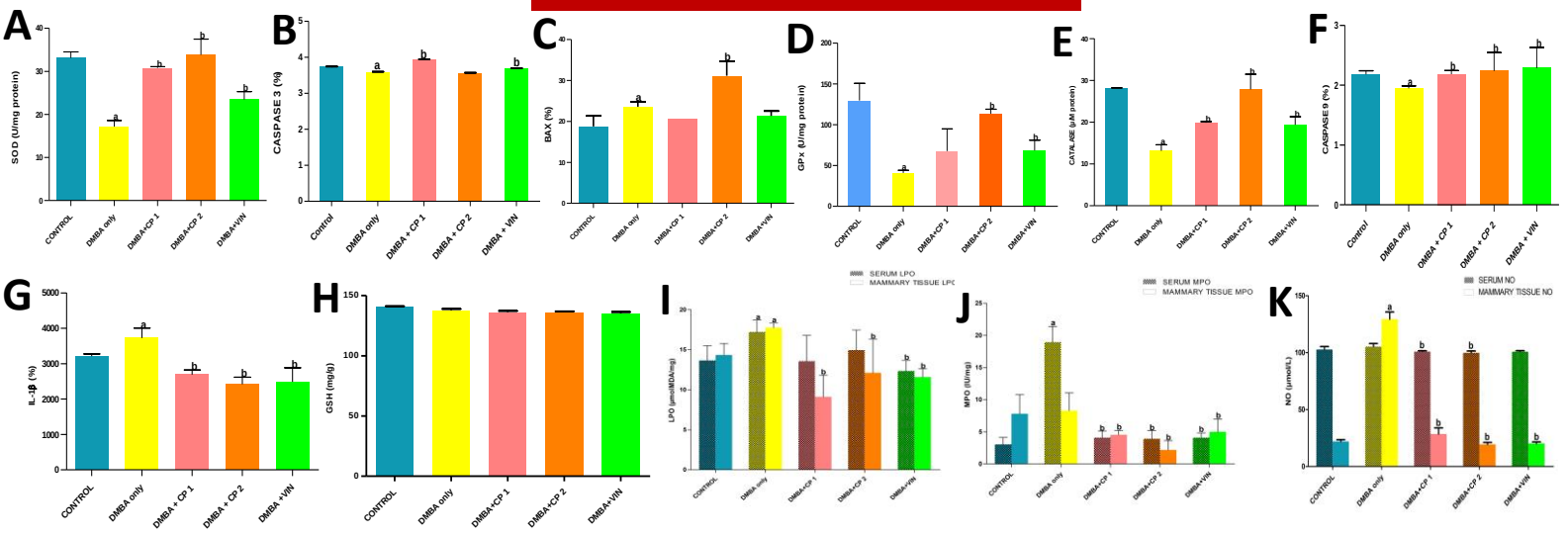

Figure A,B,C,D,E,F,G,H: Effect of *Calliandra portoricensis* on the activities of mammary tissue superoxide dismutase (SOD), caspase 3 (Cas 3), level of serum Bcl-2-associated X protein (BAX), activities of mammary tissue glutathione peroxidase (GPx) and catalase (CAT), serum caspase 9 (Cas 9) and interleukin-1β (IL-1 β) and levels of reduced glutathione (GSH) respectively in DMBA-induced mammary gland neoplasm in female rats.

Values are expressed as mean ± SD of 4 animals

DMBA = 7, 12-dimethylbenz-[a] anthracene, CP = Calliandra portoricensis VIN = Vincristine, CP 1 = Calliandra portoricensis 50mg/kg, CP 2 = Calliandra portoricensis 100mg/kg

a significantly different from CONTROL ($p<0.05$)

b significantly different from DMBA only ($p<0.05$)

Figure I,J,K: Effect of *Calliandra portoricensis* on the level of mammary tissue and serum malonaldehyde, activities of myeloperoxidase (MPO) and nitric oxide (NO) respectively in DMBA-induced mammary gland neoplasm in female rats.

Values are expressed as mean ± SD of 4 animals

DMBA = 7, 12-dimethylbenz-[a] anthracene, CP = Calliandra portoricensis VIN = Vincristine, CP 1 = Calliandra portoricensis 50mg/kg, CP 2 = Calliandra portoricensis 100mg/kg

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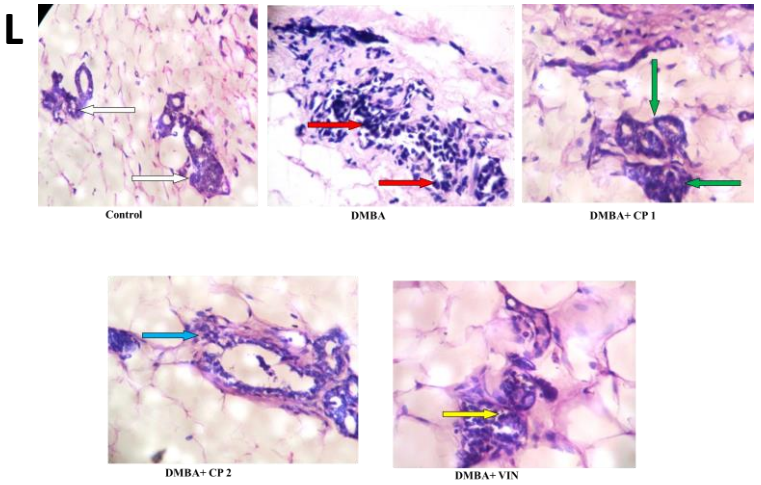

Figure L: Representative photomicrographs showing the effect of *Calliandra portoricensis* on mammary tissue of rats treated with 7, 12-dimethylbenz-[a] anthracene (DMBA)

CONCLUSION

- Calliandra portoricensis protects mammary gland from DMBA-induced insults via antioxidative and anti-inflammatory mechanisms.
- This experiment confirms that CP can act as a therapeutic agent in the management of mammary gland tumour.

SELECTED REFERENCES

•Adaramoye O, Erguen B, Oyebode O, Nitzsche B, Höpfner M, Jung K. 2015. Antioxidant, antiangiogenic and antiproliferative activities of root mtehanol extract of Calliandra portoricensis in human prostate cancer cells. J Int Med, 13:185-93.

•Adefisan A, Owumi S, Adaramoye O. 2019. Root bark extract of Calliandra portoricensis (Jacq.) Benth. chemoprevents Nmethyl-N-nitrosourea-induced mammary gland toxicity in rats. J Ethnopharmacol,233:22–33.

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