



Phenolic and flavonoid rich bioactive leaf fractions of *Eucalyptus camaldulensis* ameliorates listeriolysin O activity and H₂O₂ induced oxidative stress in Caco-2 cells

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Abstract:

Eucalyptus camaldulensis is a rich source of bioactive essential oil with extensive application in folk medicine. Leaves of the plant are rich in phenolic and flavonoid content with antimicrobial and antioxidant activities. In this study, leaves of

E. camaldulensis were extracted and the aqueous and ethanol fractions were obtained. The antimicrobial activities of the ethanol and aqueous fractions showed minimum inhibitory concentrations range of 16–64 and 158–316 µg/ml, respectively. Antioxidant assay indicated better activity for the aqueous fraction with IC₅₀ of 7.07 and 17.96 µg/ml for DPPH and ABTS assays, respectively. Folin-Ciocalteu and AlCl₃ assays revealed a total phenolic content of 9.04±0.26 and 3.58±0.04 mg GAE/mg fraction and total flavonoid content of 2.07 ± 0.02 and 3.37±0.05 mg QE/mg fraction for aqueous and ethanol fractions, respectively. At sub-inhibitory concentrations Listeriolysin O induced RBC haemolysis was reduced by 63–98% and 6–92% after treatment with aqueous and ethanol fractions, respectively. Cell studies on Caco-2 human colon cells revealed that at sub-toxic concentrations, H₂O₂ induced toxicity was ameliorated by 8–23% and 15–83% by aqueous and ethanol fractions, respectively. In addition, H₂O₂ induced oxidative stress measured using Griess assay showed a reduction in nitrite production of 4–17 and 3–14 µM for aqueous and ethanol fractions, respectively. The study reveals that phytochemical fractions of *E. camaldulensis* possess multiple bioactivity and can be explored as preservative, or functional additive in food.

Biography:

Ozioma is a Dr of Medical Microbiology from the Prince of Songkla University, Thailand. He is interested in the



applications of natural products in food, medicine and environment. Currently, his research area focuses on food and waterborne diseases, as well as general food safety, especially on the use of natural products as food preservative and functional additives. He is also interested in active and intelligent food packaging for the extension of food shelf-life.

Publication of speakers:

1. Gonçalves, S., Moreira, E., Andrade, P. B., Valentão, P., & Romano, A. (2019). Effect of in vitro gastrointestinal digestion on the total phenolic contents and antioxidant activity of wild Mediterranean edible plant extracts. *European Food Research and Technology*, 245(3), 753-762.
2. Nasr, A., Saleem Khan, T., & Zhu, G.-P. (2019). Phenolic compounds and antioxidants from *Eucalyptus camaldulensis* as affected by some extraction conditions, a preparative optimization for GC-MS analysis. *Preparative Biochemistry and Biotechnology*, 49(5), 464-476.
3. Ng, K. R., Lyu, X., Mark, R., & Chen, W. N. (2019). Antimicrobial and
4. antioxidant activities of phenolic metabolites from flavonoid-producing yeast: Potential as natural food preservatives. *Food Chemistry*, 270, 123-129.

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