



# Toxicity, chemical composition, anti-inflammatory and antioxidant activities of plants used for the treatment of helminth infections in the Kara and Central region of Togo.

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## ABSTRACT

**Objectives:** Traditional healers (THs) from the Central and Kara regions of Togo use *Aframomum melegueta* (Alligator pepper), *Khaya senegalensis* (Senegal mahogany) and *Xylopiya aethiopica* (Kani pepper) for the treatment of helminths infections. We previously confirmed the anthelmintic effects of these plants. THs had little information about plants compounds, anti-inflammatory, antioxidant activities and toxicity. The present study aimed to investigate anti-inflammatory, antioxidant activities and toxicity of *Aframomum melegueta*, *Khaya senegalensis* and *Xylopiya aethiopica* used for the treatment of helminthiasis in the Central and Kara regions of Togo.

**Methodology and Results:** Anti-inflammatory activity was evaluated using the inhibition method of lipoxygenase type I-B extracted from soybean. The concentrations of polyphenols and flavonoids were measured respectively by the Folin-Ciocalteu reagent reduction method and the Aluminium chloride colorimetric method. Antioxidant activity was assessed by the DPPH and ABTS assays. Acute and subchronic toxicity was performed on Wistar rats according to OECD recommendations. *Khaya senegalensis* and *Xylopiya aethiopica* showed, a greater anti-inflammatory activity by inhibiting lipoxygenase activity *in vitro* and antioxidant activity (*Aframomum melegueta*; ABTS 32.79±3.79 mgEAA/100mg and *Xylopiya aethiopica*; DPPH IC<sub>50</sub> of 2278.89±104.68 µg/mL). *Khaya senegalensis* contained a high concentration of flavonoids

( $1.39 \pm 0.07$  mgEQ/100mg) and phenols ( $329.21 \pm 19.99$  mgEGA /100mg). No toxic effects were observed for the chosen doses with these plants extract.

*Conclusions and application of findings:* Extracts of *Khaya senegalensis* and *Xylopi aethiopica* had anti-inflammatory activities. In addition, extracts of *Khaya senegalensis* and *Aframomum meleguet* had excellent antioxidant power and had the highest concentrations of polyphenols and flavonoids. This finding could justify the traditional use of these plant organ extracts for the treatment of helminth infections and provide scientific evidence to traditional healers in the central region and Kara in Togo. However, further studies are necessary to determine the molecules responsible for the pharmacological properties of these plant organ extracts and their mechanisms of action.

**Key words:** *Aframomun melegueta*, *Khaya senegalensis*, *Xylopi aethiopica*, anti-inflammatory activity, antioxidant activity.