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ABSTRACT

Cocos nucifera is one of the most valuable plants to man and was used as a primary source of food, drinks and even medication. It has been used as a traditional medicine by many cultures. The rats were placed in Group A, B, C, D, E and F of five each. The distal 2 – 3 cm portion of the rats tails were immersed in hot water maintained at $55\pm 1^{\circ}\text{C}$ for 30 seconds and removed. The rats were placed back in their different cages. Packed cell volume (PCV) decreased in all the groups except for group C which was at equilibrium with the negative control, but was not statistically different from the controls. Total white blood cell (TWBC) decreased significantly when compared with the negative and was statistically significant in group A when compared with Ibuprofen (standard drug), and negative control; group B was also statistically significant when compared with the negative control. Platelets increased significantly in the groups in the entire treatment groups when compared with the controls. This study showed that *Cocos nucifera* possesses potential anti-inflammatory activities, thus, confirms the folklore use of the plant in the treatment of ailments associated with pain and inflammation.

KEY WORDS: *Cocos nucifera*, Anti-inflammatory, Treatment, Platelets, WBC, RBC

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INTRODUCTION:

Herbal products are gaining growing attention due to less toxicity and high efficacy against free radical mediated diseases [1]. Flourishing for many centuries [2], at present, approximately 25% of drugs in modern pharmacopoeia are derived from plants. *Cocos nucifera* (*C. nucifera*), belongs to the family of Palmae in Araecaeae order and it is originated from Malaysia, Polynesia and Southern Asia and is now prolific in South America, India and the Pacific Island [3]. *C. nucifera* have long been used in traditional medicine for treatment of metabolic disorders [4]. Literature data revealed that *C. nucifera* endocarp is a rich resource of phenolic and flavanoid compounds which are responsible for diverse biological activities in medicinal plants beneficial to human health and disease prevention [5-13]. Is one of the most valuable plants to man and was used as a primary source of food, drinks and even medication. It has been used as a traditional medicine by many cultures [14, 15].

The fruit of *C. nucifera* contains the coconut water (juice) and coconut meat (kernel), famous in the Malays folklore medicine for its ability to relieve fever [16]. In addition, Alleyne et. al. [17] have also reported on the *C. nucifera* juice extract ability to control hypertension in a clinical trial carried out at the University of the

West Indies, St Augustine, Trinidad and Tobago, West Indies.

Previous studies have also demonstrated that the aqueous extract of husk fiber of *C. nucifera* possessed peripherally- and centrally-mediated antinociceptive and antioxidant [18], antimicrobial and antiviral [19] and leishmanicidal [20] activities.

MATERIALS AND METHOD:**Extraction of *Cocos nucifera* oil and Water**

The fresh endosperm of the coconut meats were cut into pieces and milled using crusher mill. The resulting mass was mixed with lukewarm water and shaft was filtered using a cotton cloth. The product was gently heated to dry all traces of moisture and filtered through a cotton cloth to obtain the oil. Fresh *C. nucifera* used for this study were dehusked and broken carefully, and the liquid endosperm used for experiments.

Thirty five (35) albino rats with average weight of 222 kg which were purchased from Oba in Enugu Ezike Nsukka, Enugu state, were used for the research. The animals were grouped into seven (7) of five each. They were fed with growers marsh produced by grand cereals and oil mills limited, Bukuru Jos, Plateau State Nigeria, obtained from Chrys Ventures Limited Owerri, Imo state.

The albino rats were weighed after gaining maximum of two weeks acclimatization. The animals were subjected to heat to induce inflammation on their tails.

Tail Immersion and Administration: The rats in Group A, B, C, D, E and F of five each, distal 2 – 3 cm portion of their tails were immersed in hot water maintained at $55 \pm 1^\circ\text{C}$ for 30 seconds and removed. The rats were placed back in their different cages.

The animals were immersed and administered the following orally:

Group A: Tail immersed + 2ml/kg of *C. ucifera* oil;

Group B: Tail immersed + 1ml/kg of *C. nucifera* oil;

Group C: Tail immersed + 4ml/kg of *C. nucifera* water;

Group D: Tail immersed + 3ml/kg of *C. nucifera* water;

Group E: Tail immersed+ 0.1g/kg of Ibuprofen;

Group F: Tail immersed + water (Positive Control)

Group G: water (Negative Control)

The dosages were given once a day in the respective groups for 4 days. At the end of the treatment, all the rats were sacrificed, the tail was dissected for histological examination and blood was taken for haematological analysis.

Haematological analysis: Blood samples were collected for analysis of Packed Cell Volume (PCV), Total White Blood Cell Count (TWBC) and platelet count.

RESULTS:

Pack cell volume (PCV) decreased in all the groups except for group C which was at equilibrium with the negative control, but was not statistically different from the controls. Total white blood cell (TWBC) decreased significantly when compared with the negative and was statistically significant in group A when compared with Ibuprofen (standard drug), and negative control; group B was also statistically significant when compared with the negative control. Platelets increased significantly in the groups in the entire treatment groups when compared with the controls (Table 1).

Each value represents the mean \pm standard deviation ($n = 5$); values are statistically different from Ibuprofen (a), Positive control (b) and Negative control (c) at $p < 0.05$ one-way analysis of variance (ANOVA) + Tukey – Kramer Multiple Comparison Test.

DISCUSSION:

The haematological results for *Cocos nucifera* oil revealed that there was shortage of blood; the Packed cell volume (PCV) decreased but was not statistically different from the controls, while total white blood cell (TWBC) decreased and was statistically significant in group A when compared with Ibuprofen (standard drug), positive and negative control and B when compared with the negative control. Platelets increased significantly in group A, when compared with Ibuprofen (standard drug),

positive and negative controls and decreased significantly in group B and was significant when compared with Ibuprofen (standard drug) and positive controls (Table 1). The increase in

platelets indicates quick responds to the site of injury.

Table 1: Haematological parameter of rats administered with *C. nucifera oil and water*

	PCV (%)	TWBC	PLT
A (Oil 2mls)	37.20 ± 50	17.60 ± 0ac	493 ± 10abc
B (Oil 1ml)	35.00 ± 30	12.70 ± 0c	413 ± 30ab
C (W 4ml)	42.00 ± 26	19.3 ± 0ac	996 ± 0abc
D (W 3ml)	39.00 ± 24	16.6 ± 0c	498 ± 0abc
E (Ib 10mg/kg)	36.00 ± 40	13.60 ± 0	461 ± 40
F (Post CNT)	36.00 ± 40	15.20± 0	563 ± 23
G (Neg CNT)	42.00 ± 10	21.50 ± 40	432 ± 20

In *C. nucifera* water PCV decreased in group C, Ibuprofen and positive control groups but was not statistically different from the negative control. The slight decrease in PCV may be connected to damage tissue.

The TWBC decreased and was statistically significant in group A when compared with Ibuprofen (standard drug), and negative control and B when compared with the negative control. The result of the TWBC corroborates that of PCV. Platelets increased significantly in group C and D, when compared with Ibuprofen (standard drug), and positive and negative controls (Table 1). This agrees with the research by Nurden et al., [21] who states that "Platelets help prevent blood loss at sites of

vascular injury. They adhere, aggregate and form a procoagulant surface favouring thrombin generation and fibrin formation. In addition, platelets express and release substances that promote tissue repair"

CONCLUSION:

This study showed that *Cocos nucifera* possesses potential anti-inflammatory activities, thus, confirms the folklore use of the plant in the treatment of ailments associated with pain and inflammation. It is recommended that further studies using isolated constituents of the *C. nucifera* oil and water should be carried out to further substantiate its anti-inflammatory properties.

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