

Immunomodulatory, cytotoxic and antileishmanial activity of phytoconstituents of *Croton zambesicus*

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Abstract

The root extract and fractions of *Croton zambesicus* were investigated for anticancer activity against HeLa cells, DNA interaction, immunomodulatory and antileishmanial activities. The GCMS analysis of the most active fraction against HeLa cell was carried. The root extract was found to exert significant anticancer activity with the hexane fraction exhibiting the most pronounced effect. The crude extract and the fractions did not interact with yeast DNA when investigated using electrophoresis. The extract demonstrated prominent antioxidant activity in whole blood, neutrophils and macrophages. The extract also exhibited moderate antileishmanial activity against promastigotes of *Leishmania major* in vitro. These results suggest that the root extract/fractions of *croton zambesicus* possesses anticancer, immunomodulatory and antileishmanial activities and these justify its use in ethnomedicine to treat cancer and microbial infections and can be exploited in primary healthcare.

Keywords: *Croton zambesicus*, anticancer, immunostimulatory, antileishmanial.

Introduction

Croton zambesicus Muell Arg. (Euphorbiaceae) (syn *C. amabilis* Muell. Arg. *C. gratissimus* Burch) is an ornamental tree grown in villages and towns in Nigeria. It is a Guineo–Congolese species widely spread in tropical Africa. Ethnobotanically, the leaf decoction is used in Benin as anti-hypertensive and anti-microbial (urinary infections) (Adjahoun et al, 1989) and in parts of Niger Delta region of Nigeria the plant is used as antidiabetic and malarial remedy (Okokon et al., 2005a, 2006), while the Yorubas of western Nigeria use it traditionally for the treatment of Cancer (Ashidi et al., 2010). The roots are used as anti-malarial, febrifuge and antidiabetic by the Ibibios of Niger Delta region of Nigeria (Okokon and Nwafor, 2009a). Boyom et al. (2002) studied the composition of essential oils from the leaves, stem and roots of *Croton zambesicus* and found the three types of oils to be similar in composition, with those from the leaves and stem rich in monoterpenes, while that of the root bark contains sesquiterpenes. The root and stem bark oils were found to be rich in oxygen-