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Evaluation of antiangiogenic and antitumor properties of anogeissus leiocarpus

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Background: Anogeissus leiocarpus is a traditional medicinal plant with strong antioxidant and hypoglycemic properties.

Hypothesis/Purpose: This study was aimed to investigate the antiangiogenic and cytotoxic effects of eight extracts from Anogeissus leiocarpa (leaves and bark).

Study Design: Eventually, the most active extract was subjected to a series of *in vitro* and *in vivo* studies to elucidate the mechanism of action.

Methods: In order to confirm the effect of the extract on motility of human endothelial cells, cell migration assay was conducted. In addition, VEGF suppressive effect of the extract was assessed in endothelial cells. Finally, the antitumor effect of the extract was evaluated using *in vivo* human tumor xenograft model.

Results: Results of the present study indicated that, hexane extract of the stem bark of A. leiocarpus was found as the most active extract on inhibition of sprouting of microvessels (89.56%). Additionally, ethanol extract of the leaves exerted high antiangiogenic (inhibition 82.12%) in rat aortic ring assay. Hexane extract of the stem bark displayed significant inhibitory effect on endothelial cells proliferation (76.87 %) while ethanol extract of the leaves was save on HUVEC cell lines (inhibition 5.80%). The two extracts inhibited HUVEC migration by 87.57 and 65.23% respectively. The extracts demonstrated significant inhibition of VEGF levels (45.32 and 30.52 % respectively) in treated endothelial cells. Finally the extracts exhibited potent anti-tumorigneic effect in anthymic mice with $\Delta T/\Delta C$ =8.43 and 12.54% at doses 400 and 200mg/kg, respectively.

Conclusion: These results may provide novel guidelines towards improved strategies using Anogeissus leiocarpus extracts based on the suppression of angiogenesis to curb the growth of tumors. The plant can be used as promising candidate for anti-neoplastic drug development.

Key words: Medicinal plants, Antitumor *in vivo*, antiangiogenic Anogeissus leiocarpus

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