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Caratterizzazione analitica e farmacologica di un estratto lipidico di *Kigelia africana* (Lam.) Benth.

Tesi di Laurea di:

Giovanni **BONO**

Relatore:

Chiar.mo Prof. Francesco **OCCHIUTO**

Contro-Relatore:

Chiar.mo Prof. Danilo **SCIARRONE**

Coordinatore del CdLM:

Chiar.ma Prof.ssa Giovanna **DE LUCA**

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Analytical and pharmacological characterization of a lipid extract of *Kigelia africana* (Lam.) Benth.

Abstract

Kigelia africana (Lam.) Benth. (Bignoniaceae), a plant native to the African continent, widely used in traditional medicine by indigenous peoples, as a plant remedy for various diseases, including some disorders of the male reproductive system, contains many secondary metabolites including iridoids, naphthoquinones, saponins, tannins, flavonoids, coumarins and many others. (Jackson S. et al. 2012) Benign prostatic hyperplasia (BPH) is a common progressive disease, dependent on androgens, which causes prostate enlargement and urinary obstruction. (Glenn J. et al. 1992) The purpose of this study is the qualitative and quantitative determination of phytoconstituents present in the unsaponifiable and saponifiable fraction of the lipidsterolic hexane extract (LHE) of the fruit of *Kigelia africana* by using comprehensive two-dimensional gas chromatography-mass spectrometry / flame ionization detection (GC x GC MS / FID), and one-dimensional gas-chromatographic analysis, and the evaluation of the effects of extract on experimental model of benign prostatic hyperplasia induced by testosterone in male Sprague-Dawley rats, by macroscopic and histological examination of the prostate, and prostatic index determination. BPH was induced in experimental groups by daily subcutaneous injections of testosterone propionate (TP) for four weeks. β -sitosterol (β -s) was used as a positive control. A first series of experiment was conducted to investigate the ability of LHE to prevent BPH, using five groups of 5 rats for group: testosterone group (5mg/kg b.w., for 4 weeks); LHE groups (administered daily orally at a dose of 10 or 100 mg/kg b.w. along with the TP injections, for 4 weeks); β -s (administered daily orally at a dose of 1 mg/kg b.w. together

with the TP injections, for 4 weeks); control group (vehicle by oral gavage and soy oil by subcutaneous injection). The second series of experiments was carried out, in two groups of 5 animals, to investigate the ability of LHE to reverse BPH. The rats were treated with LHE (100 mg/kg b.w.) or β -s (1 mg/kg b.w.) together with the TP injections for other 2 weeks. On day 28, the animals were sacrificed by cervical dislocation after anaesthesia. Prostates were excised, weighed, and used for macroscopic and microscopic studies. The phytochemical analysis results showed the presence of fatty acids, hydrocarbons, alcohols, tocopherols and sterols, and quantitative analysis showed the presence of the absolute amount of sterols and triterpene alcohols. The macroscopic examination showed a marked improvement in the size of the organs both in the group treated with the LHE that in the group treated with only β - sitosterol, compared to the group treated with testosterone propionate, microscopic examination showed that in groups treated with the LHE and β - sitosterol, fibromuscular stromal matrix, the proliferation of epithelial cells and the enlargement of glandular cavity were markedly reduced.

Keywords: *Kigelia africana*, Benign prostatic hyperplasia, lipidosterolic hexane extract, β – sitosterol, gas chromatographic analysis.