

National University of Science and Technology

Think in Other Terms



FACULTY OF APPLIED SCIENCE

DEPARTMENT OF APPLIED CHEMISTRY

TITLE

**EXTRACTION AND CHARACTERISATION OF MUCILAGE FROM THE
HERB *DICEROCARYUM SENECIOIDES* AND EXPLORATION OF ITS
POTENTIAL USE AS A HAIR PERMANENT**

By

HARDLIFE RAMBWAWASVIKA

(N007 1401W)

LIBRARY
NATIONAL UNIVERSITY OF SCIENCE
AND TECHNOLOGY
P.O. BOX 346 BULAWAYO
ZIMBABWE

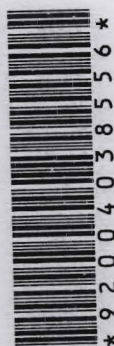
| DATE | ACCESSION | CLASSIFICATION |
|----------|--------------|----------------|
| 11/05/16 | SC 15/847 | |

Submitted in partial fulfillment of the requirements for

Bachelor of Science Honors Degree

SUPERVISOR: DR C.T. PAREKH

YEAR: MAY 2015



92004038556

NUST Library

ABSTRACT

In light to the toxic nature of hair curling and straightening actives in the market today, it is imperative that research be focused on this area in order to come up with safer alternatives. The present study was undertaken to isolate and evaluate extracts from the leaves of *Dicerocaryum senecioides* (devil's thorn) and explore on its potential use as a hair permanent. A mucilage containing bioactive compounds was extracted from dried and pulverized leaves of *Dicerocaryum senecioides* using four extracting solvents with varying polarities viz methanol, n-hexane, dichloromethane and water. Metal ions in the extract were analysed by Atomic Absorption Spectrometry (AAS) and removed by Amberlite cationic exchange resins. Solvent-solvent extraction, column chromatography and Thin Layer Chromatography (TLC) were used to further isolate and characterize target compounds. Extracts were tested for reducing ability by iodometric titration and Ultraviolet-Visible (UV-Vis) Spectrophotometric reducing power method. Extracts' hair curling ability was tested on African and Asian hair samples at various pHs. The dichloromethane (D₂) fraction exhibited both the highest reducing power and best hair curling ability supported by a perm set of 86 % compared to 34 % of hexane (D₁) and 54 % for water (D₃) at an ammonium buffered pH of 9.5. The removal of metal ions was found to improve extract curling capacity from 62 % to 86 %. Phytochemical analysis of D₂ extract on TLC suggests the presence of an unsaturated and polar compound which quenched the fluorescence of Ultra-violet (UV) light at wavelength 254 nm and reacted with vanillin-sulphuric acid reagent to give a dark brown colour.