

RESEARCH

Research Completed

1. Phytochemical investigation of *Crinum ornatum* bulb, *Hura crepitans*, *Dieffenbachia picta* extracts

Extraction, purification and characterization of isolated compounds from *Crinum ornatum* bulb revealed that the plant contained secondary metabolites which have antioxidant and anticonvulsant principles justifying its use in traditional medicine practise. The essential oil also contained cytotoxic compounds which can be beneficial in the treatment of diseases involving cell or tumor growth. *Hura crepitans* and *Dieffenbachia picta* are two other plants which active components have been reported to contain microbial and oxidation inhibition properties. Papers 3 - 5, 11, 12, 19, 39 and 45 reflected some of the results obtained.

2. Phytochemical investigation of *Alchornea laxiflora* and *Quassia Amara* used as antioxidant and hepatoprotective agents in ethno medicine

Alchornea laxiflora is another plant with antioxidant flavonoids, the extracts of which were shown to have hepatoprotective constituents. Quercetin being the major compound isolated has proven antioxidant activity. It was a collaborative research done with other researchers. Paper 9 summarizes the research findings. The effects and possible mechanism of action of *Quassia Amara* (L. Simaroubaceae) extract and its bioactive principles in Rats as well as the cytotoxicity and acute oral toxicity of Quassin, one of the major metabolites are reported in Papers 7, 16, 21 and 31.

3. Synthesis and biological evaluation of N-Mannich Bases

Classical and variant approaches to synthesis of N-Mannich bases of phenyl hydroxyl ketones, their characterization, and biological activities. Novel Mannich bases have been shown to have microbial and oxidation inhibition activities. Papers 13, 30, 31, 34 and 40 summarised some of our findings.

(a) In progress

1. Chemical composition, antioxidant, antimicrobial, enzyme inhibition and hepatoprotective activities of *Larpoetea aestuans* and *Albizia zygia*.

The research was started in 2015 to isolate and characterise the secondary metabolites responsible for the enzyme inhibition and hepatoprotective activities of *Larpoetea aestuans* and *Albizia zygia* used in ethno-medicine. So far, the crude extracts from these plants have been shown to possess these activities. Novel chemical compounds have been isolated and subjected to bioassay. Report of analysis is being processed.

2. Application of Lignin in drug synthesis using Mannich reaction.

Lignin is a constituent of many plants but with little or no application in medicine. Research on use of Lignin was commenced in 2016. Literature search has shown that it can be used to cure many ailments but the focus in this research is its use as anti-cholesterol agent. Lignin based Mannich bases are intended to be prepared and characterised. Variant approach to synthesis of Mannich bases will be embarked upon as this will give further insight into structural activity relationship of the bases. It is expected that the activity will also be established scientifically.

3. Bioactive antiviral constituents of *Anogeissus leiocarpus* (DC.) Guill. & Perr. (Combretaceae) and *Vitex chrysocarpa* Planch. ex Benth.

This research was started in January 2017. The recent outbreak of viral diseases like Ebola, and Zika necessitated the research. Two Plants used in Traditional Medicine *Anogeissus leiocarpus* (DC.) Guill. & Perr. (Combretaceae) and *Vitex chrysocarpa* Planch. ex Benth. to treat viral disease have been collected and extracted. Chromatographic separation is on and HPLC-MS analysis of the methanol extracts gave metabolites of medicinal importance. Antiviral screening is currently on.

Current Research Interest

- (i) Chemistry of Natural Products and their Medicinal Uses.
- (ii) Phytochemical evaluation of Medicinal Plants with emphasis on antioxidant, anticancer and hepatotoxic activities.
- (iii) Isolation and Characterisation of bioactive chemical compounds from plants
- (iv) Synthesis of Schiff and Mannich Bases and investigation of their biology activities