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DISPUTASDATO:	20.08.2014

AVHANDLINGENS TITTEL: *Biological and chemical studies of medicinal plants*
A: Chemistry and biological activities of medicinal plants from Mali
B: Complement fixing polysaccharides from Chinese medicinal plant Codonopsis pilosula

In Mali and China, like many developing countries, a high percentage of the population depends on traditional medicine for primary health care. Leaf, stem bark, roots, root bark or whole plant from different medicinal plants or trees are used in different preparations for traditional use. Harvesting from the wild, the main source of raw material, is causing a growing concern that collection could lead to local extinctions. The main purpose of this thesis was to evaluate the potential of two Malian medicinal plants and one Chinese cultivated medicinal plant in the treatment of immune related diseases. This thesis also aimed to promote the sustainable use of medicinal plant resources.

Seven purified pectic polysaccharides fractions were isolated from *Parkia biglobosa* bark. All of the fractions exhibited potent complement fixation activity, and fractions PBEII-I, PEBII-III and PBEII-IV also showed potent macrophage stimulating activity.

27 different crude extracts were obtained by boiling water extraction (BWE) and accelerated solvent extraction (ASE) from root bark, stem bark and leaves of *Terminalia macroptera*. None of the extracts were toxic against brine shrimp larvae in the test concentration. Based on the results from principle component analysis, the ASE ethanol extracts of root bark and stem bark and the low molecular weight fraction of the 50% ethanol-water extract of leaves showed the highest total biological activities, which indicated that ASE has higher extraction efficiency than BWE.

Fifteen purified pectic polysaccharide fractions were obtained from nine crude extracts of *T. macroptera* (root bark, stem bark and leaves) by using BWE and ASE. The root bark, leaves and stem bark are all good sources for fractions containing bioactive polysaccharides. Due to sustainability, it is preferred to use leaves rather than the other two plant parts, but the dosage by weight must be higher when using leaves.

Two bioactive purified polysaccharide fractions, 50WCP-II-I and 100WCP-II-I, were isolated from 50^{o}C and 100^{o}C water ASE extracts of cultivated roots of *Codonopsis pilosula* Nannf. *var. modesta* L.T.Shen.

The observed enzyme inhibition activities, radical-scavenging properties and complement fixation activities may explain some of the traditional uses of these three medicinal plants. The pectic polysaccharides are response for immunomodulating activities observed.