

**STUDIES ON NUTRITIONAL, PHYTOCHEMICAL
AND ANTIBACTERIAL ACTIVITY OF SOLVENT
EXTRACTS OF PALMYRAH (*Borassus flabellifer*)
DRIED PULP AND FLOURS**

A dissertation submitted to the
Faculty of Animal Science and Export Agriculture
Uva Wellassa University

In partial fulfillment of the requirements for the award of
Bachelor of Science in Palm & Latex Technology and Value Addition

By
SRIKANTHARASA SRISHANKAR

**Palm & Latex Technology and Value Addition Degree Programme
Faculty of Animal Science and Export Agriculture
Uva Wellassa University of Sri Lanka**

2015

ABSTRACT

In this study phytochemical, nutritional and antibacterial activity of solvent extracts of pinattu and flours (odiyal, boiled odiy) was identified and evaluated. Samples were collected from the three different branches of Palmyrah Development Board then extracted with different solvents such as aqueous, methanol, ethyl acetate and petroleum ether then concentrated by using rotatory evaporator after that obtained extracts were used for the analysis. Significant differences were observed among all samples for all the nutrients tested and there was no significant difference in moisture content of the samples. Pinattu extracts contained alkaloids, carbohydrates, saponins, phytosterols, phenols, flavonoids, proteins and amino acids and fats & fixed oils, glycosides except tannins. Boiled odiy flour extracts revealed positive results for carbohydrates, saponins, phytosterols, phenols, flavonoids, proteins and amino acids and fats & fixed oils was present except glycosides and alkaloids. While odiy flour gave negative results for glycosides test, alkaloids test and tannin test. Total phenolic compounds were highest in aqueous extract of pinattu [19.917(\pm 0.42)] and odiy [12.837(\pm 0.03)] while boiled odiy flour was showed in methanolic extract [3.151(\pm 0.05)]. Flavonoid content of methanolic extract of pinattu, boiled odiy flour and odiy flour were exhibited highest values such as 0.176(\pm 0.00), 0.569(\pm 0.03) and 0.385(\pm 0.01) when compared with aqueous extract 0.00, 0.341(\pm 0.16) and 0.264(\pm 0.00) (mg/g) respectively. Methanolic extracts of pinattu 509.880(\pm 4.18), boiled odiy flour [203.816(\pm 2.88)] and odiy [89.692(\pm 1.31)] showed highest total saponin content when compared with other extracts while there were no significance different ($p < 0.05$) between aqueous extract of odiy flour. The antibacterial activity of extracts with different concentration was evaluated according to their diameter of the zone of inhibition against various bacteria and the results were compared with the activity of the chloramphenicol (positive

control) and solvent (negative control).Least Minimum inhibitory concentration of *Staphylococcus* was 0.5 mg/ml for aqueous extract [1.4±(0.14)cm]however 0.25 mg/ml for methanol extract[1.35±(0.07)cm]. *E.coli* was showed 0.5 mg/ml for both aqueous [1.2±(0.00)cm]and methanol extract [1±(0.00)cm]. *Pseudomonas* was showed 0.5 mg/ml for aqueous extract [1.4±(0.14)cm] though 0.5 mg/ml for methanolic extract [1.1±(0.00)cm]. The *Salmonella* was showed 0.75 mg/ml for aqueous extract [1.1± (0.00) cm] however 0.25mg/ml for methanolic extract [1.1±(0.14)cm]. *Klebsiella* was showed 0.25 mg/ml for aqueous extract [1.1±(0.00)cm]and methanol extract [1.35±(0.07)cm].*Protease* was showed highest inhibition zone for 1mg/ml of aqueous extract [2.15±(0.21)cm]when compared with positive control [1.9±(0.14)cm]. And least MIC of *Bacillus* was 0.75 mg/ml for aqueous extract [1.1±(0.00)cm] whereas 1mg/ml for methanol extract [1.45±(0.07)cm].

Key words: Antibacterial activity, Palmyrah, Phytochemicals, Pinattu, and Solvent extracts