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Chemical Study on Sumatran Ferns

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Our study of some Sumatran lower plants particularly ferns started with ethnobotanical survey around West Sumatran Province followed by biological activity screenings such as antibacterial using pathogenic bacteria, *Echerichia coli*, *Staphylococcus epidermidis* and *Staphylococcus aureus*.

One of our interesting ferns *Diplazium esculentum* (Retz.) SW. (Polypodiaceae) locally known as "vegetable fern" was selected for further study. Its methanolic extract did not show significant inhibition toward the growth of the above bacteria and also did not show significant antioxidant activity when tested using DPPH method.

Despite the (-)-ve results, chemical study on its methanolic extract was then conducted due to its popularity locally as vegetables as well as its medicinal use to treat fever and skin ailments. So far, three major compounds have been isolated from its methanolic extract and one of them has been identified as stigmast-5-en-3*β*-ol. The study to identify the other two isolated compounds is in progress.

The second fern locally known as "Paku Ruman" and traditionally used to treat diarrhoea was identified as *Trichomanes* sp. (Hymenophyllaceae) was tested as above. Interestingly its methanolic extract showed strong activity to inhibit the growth of the bacteria as well as strong antioxidant activity. The methanolic extract was then fractionated into hexane, ethyl acetate and butanol. The highest inhibition toward the growth of the bacteria gave by ethyl acetate fraction, and the same result was observed when tested with DPPH.

Phytochemical screening showed the presence of triterpenoids and phenolic compounds. In isolation work that followed, the leaves gave two major compound identified from its spectroscopic data (1H and 13C NMR, MS, UV and IR) as 2, 4-dihydroxybenzoic acid (**I**) and 2,4-dihydroxybenzaldehyde (**II**), while the stems gave the same compounds but the major component was **II**. Attempts to isolate and identify other chemical constituents of these ferns are in progress. Extraction, isolation and biological activity work as well as structure elucidation will be discussed.