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Comparative phytochemical screening of *Trametes* species: A wild mushroom collected from Ondo State, Nigeria

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Phytochemical studies were carried out on the *Trametes* species (L) collected from Ondo, Akure and Ipele districts, Ondo State , Nigeria. Three extracting solvents viz: Ethanol, ethyl acetate and hexane were used in the extraction of bioactive compounds from the fungus. Qualitative and quantitative analysis of nine secondary metabolites (alkaloids, tannins, saponins, flavonoids terpenoid, steroid, phlabotannin, antraquinone and cardiac glycosides) were undertaken. Extract yield was higher in ethanol extract of *Trametes* species when compared to yield from other extracting solvents. All secondary metabolites analyzed were present in all mushroom studied except alkaloids, phlabotannin and antraquinone but at different concentrations. Generally, flavonoid was the most abundant in the mushroom, followed by tannin and saponin. The findings provided evidence that ethanol extracts of these tested mushrooms contain medicinally important bioactive compounds and it justifies their use in the traditional medicines for the treatment of different diseases.

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Biosorption of heavy metals using *Acidithiobacillus ferrooxidans* and kinetic study

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This study attempted to conduct a synthetic study on biological recovery of heavy metals from spent catalysts using *Acidithiobacillus ferrooxidans*. This bacterium produces sulfuric acid and helps recovering metals at the same time. It is easily adapted to growing concentrations of heavy metals under optimized conditions (temperature 30°C, Ph 1.9, pulp density 120 µm, rotation speed 160). This study measured Ph, Eh, cellular mass, ferrous and ferric iron concentrations during bioleaching and also bacterium-mediated bioleached content from the spent catalyst. The results revealed that the higher concentrations of spent catalysts could act as a reproduction inhibitor and as a result lower the growth rate of the bacterium. For example, at 200 g/L, bacterium's cell division occurred once in 8 days and the kinetics of growth was 0.093 per day. Bacteria's population rose to 504×10^7 from the initial 1×107and then fell to 3.6×10^7 following the death phase. Reaction rate of culture batch containing 200 mg/L Ni followed 2nd order rate (in the presence of *Acidithiobacillus ferrooxidans*) and the kinetics of reaction was the slope of the line (0.005). Also, reaction rate of culture batch containing 200 mg/L V followed 1st order rate (in the presence of *Acidithiobacillus ferrooxidans*) and the kinetics of reaction was the slope of the line (-0.086).

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