

## Metabolome-based Profiling of African Baobab Fruit (*Adansonia Digitata* L.) Using a Multiplex Approach of MS and NMR Techniques in Relation to Its Biological Activity

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**Abstract :** Diabetes Mellitus (DM) is a chronic disease affecting a large population worldwide. Africa is rich in native medicinal plants with myriad health benefits, though less explored towards the development of specific drug therapy as in diabetes. This study aims to determine the in vivo antidiabetic potential of the well-reported and traditionally used fruits of Baobab (*Adansonia digitata* L.) using STZ induced diabetic model. The in-vitro cytotoxic and antioxidant properties were examined using MTT assay on L-929 fibroblast cells and DPPH antioxidant assays, respectively. The extract showed minimal cytotoxicity with an IC<sub>50</sub> value of 105.7 µg/mL. Histopathological and immunohistochemical investigations showed the hepatoprotective and the renoprotective effects of *A. digitata* fruits' extract, implying its protective effects against diabetes complications. These findings were further supported by biochemical assays, which showed that i.p., injection of a low dose (150 mg/kg) of *A. digitata* twice a week lowered the fasting blood glucose levels, lipid profile, hepatic and renal markers. For a comprehensive overview of extract metabolites composition, ultrahigh performance (UHPLC) analysis coupled to high-resolution tandem mass spectrometry (HRMS/MS) in synchronization with molecular networks led to the annotation of 77 metabolites, among which 50% are reported for the first time in *A. digitata* fruits.

**Keywords :** adansonia digital, diabetes mellitus, metabolomics, streptozotocin, Sprague, dawley rats

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