

Polyphenol-rich ethyl acetate fraction of *Molineria latifolia* rhizome restores oxidant-antioxidant balance by possible engagement of KEAP1-NRF2 and PKC/NF- κ B signalling pathways

ABSTRACT

The present study examined the potential of ethyl acetate fraction (EAF) isolated from *Molineria latifolia* rhizome to modulate the oxidant-antioxidant balance in high fat diet and nicotinamide/streptozotocin-induced diabetic rats. Administration with EAF ameliorated systemic antioxidant status- and oxidative stress-related parameters without affecting the renal and liver functions in the diabetic rats. Further analyses on adipose, muscle and liver tissues demonstrated differing ability to scavenge free radicals and protection against lipid peroxidation. Transcriptional changes proposed concerted modulation of both KEAP1-NRF2 and PKC/NF- κ B signalling in tissue-specific manner. Qualitative profiling of compounds present in EAF was analysed by non-targeted HPLC-QTOF mass spectrometry. A total of 23 unique mass signals were detected in EAF. Putative identification revealed a mixture of naturally occurring polyphenols ranging from cinnamic acid-, benzoic acid- and flavonoid-derived groups. Overall, the study demonstrated potential application of EAF to reinstate diabetes-induced oxidant-antioxidant imbalance by potentially modulating the NRF2–NF- κ B signalling axis.

Keyword: Ethyl acetate fraction; Oxidant-antioxidant balance; Diabetes mellitus; KEAP1-NRF2 signalling; PKC/NF- κ B signalling