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Profiling of phenolic compounds and antifibrotic activity of *Tamarix nolitica* (Tamaricaceae) from different habitats: A comparative study

A Thesis Submitted By

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I Dedicate this work to

the soul of my grandfather

grandmother

to my lovely parents

and beautiful wife

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ABSTRACT

Tamarix nilotica (Ehrenb.) Bunge (Tamaricaceae), an indigenous plant to the Middle East region, is well-known as a medicinal plant for treating many human ailments. The current study aimed at exploring the polyphenols profile of the alcohol soluble fraction of *T. nilotica* aqueous extracts and assessing it's *in vivo* antifibrotic activity together with investigating the underlying mechanisms for such activity. In addition to unravel the impact of quantitative difference of sulphated polyphenols content on the antifibrotic activity of *T. nilotca* grown in two different habitats Egypt (ETN) and Saudi Arabia (STN). Polyphenols profiling of *T. nilotica* extracts was performed using HPLC-HRESI-MS-MS. The major polyphenol components included sulphated polyphenols; representing a total of 92.6 % in STN to 60.49 % in ETN. The antifibrotic activity was evaluated through carbon tetrachloride-induced liver fibrosis in rats. Biochemical evaluations revealed that both extracts ameliorated the increased levels of hepatic aminotransferases, lipid peroxidation, hydroxyproline, tumor necrosis factor-α (TNF-α) and cyclooxygenase-2 (COX-2). In addition, both extracts reduced the over expression of α-smooth muscle actin (α-SMA) and nuclear factor kappa b (NF-κB) which were measured immunohistochemichally. Moreover, ETN and STN both restored the reduced catalase activity (CAT) and the depleted hepatic glutathione (GSH) content. Histopathological imaging undoubtedly

confirmed such results. In conclusion, *T. nilotica* polyphenols rich extract exhibited potential antifibrotic activity in rats. Significant alterations in GSH levels might be attributed to the presence of sulphated polyphenol metabolites content.

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