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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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Sciences

(Pharmacognosy)

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2019

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*I Dedicate this work to*

*the soul of my grandfather*

*grandmother*

*to my lovely parents*

*and beautiful wife*

## Acknowledgement

All praise is due to **Allah**, Most Merciful, the Lord of the Worlds for giving me the chance, strength and the ability to complete this work.

I would like to express my deepest gratitude. Sincere and profound appreciation to the following people who significantly contributed to the work done in this thesis:

**Prof. Dr. AbdelNaser B.Singab**, Professor of Pharmacognosy & vice president of AinShams University for research and postgraduate affairs, for his valuable and constructive suggestions during the planning and the development of this research work. Words are not enough to express my great appreciation to him for his kind supervision, valuable advice and comments, generous support, sincere guidance and continuous enthusiastic encouragement during this study, setting an example to what a dedicated professor, scientist and advisor should be. His constructive criticism and suggestions helped me a lot to improve this work through the experimental investigations as well as writing and revising the thesis. I am truly blessed to be one of his loyal students.

**Dr. Noha Swilam**, Lecturer of Pharmacognosy, Faculty of Pharmacy, The British University In Egypt (My older sister and supervisor), for suggesting the topic for this thesis. Her extraordinary academic support and encouragement have been of great value for me. Her understanding and kind personality have provided a good basis for the present work. I would like to thank her for her efforts in supervising this work and revising the thesis.

**Ass. Prof. Dr. Sherif S.Ebada**, Associate professor of Pharmacognosy, Faculty of Pharmacy, Ain Shams University, for his efforts, scientific and academic guidance as well as scientific advice through the work, writing and revising the whole thesis.

**Dr. Ahmed Esmat**, Lecturer of Pharmacology and Toxicology, Faculty of Pharmacy, Ain Shams University. for his great support, directions and guidance throughout the process of planning and performing the antifibrotic study, data analysis and results interpretation.

**Dr. Ahmed El Khatib** For his valuable participation in the process of the LC/MS/MS profiling and for his extra efforts in throughout the process of publishing the paper.

**Prof. Dr. Nahla A. Ayoub**, Professor of Pharmacognosy, Umm Al Qura University (My professor and second mother) for her continuous personal and scientific advice, valuable discussions, variable knowledge and extensive efforts throughout this thesis.

**Prof. Dr. Mohy ElMazar**, Professor of Pharmacology and toxicology and the Dean of the faculty of pharmacy, British University in Egypt, for his unceasing support on both the academic and scientific fronts, and for providing whatever that is necessary for creation and maintaining a research enriched environment at the faculty of pharmacy of the British University in Egypt.

Finally, I would like to express my deep appreciation to all colleagues in the **BUE Pharmacognosy department and room 310** for their continuous encouragement and help.

**Ahmed Mohammed Abo Sekkien**

## 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 its *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. nilotica* 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- $\alpha$  (TNF- $\alpha$ ) and cyclooxygenase-2 (COX-2). In addition, both extracts reduced the over expression of  $\alpha$ -smooth muscle actin ( $\alpha$ -SMA) and nuclear factor kappa b (NF- $\kappa$ B) which were measured immunohistochemically. 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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