A detailed chemical study of the aerial parts of *Tamarix nilotica* (Tamaricaceae) from Saudi Arabia led to the isolation of a new pentacyclic triterpenoid, 3-\textit{O}-\textit{trans}-caffeoylisomyricadiol, in addition to nine known compounds. The structures of all isolated compounds were unambiguously elucidated by 1D, 2D NMR, and mass spectrometry. In the radical scavenging (DPPH) assay, 3-\textit{O}-\textit{trans}-caffeoylisomyricadiol exhibited potent antioxidant activity with an IC$_{50}$ value of 3.56 µM, while that for quercetin (standard antioxidant) was 5.72 µM.

**Key words:** *Tamarix nilotica, 3-\textit{O}-\textit{trans}-Caffeoylisomyricadiol, Antioxidant Activity*