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NETWORK ETHNOPHARMACOLOGICAL EVALUATION OF THE IMMUNOMODULATORY ACTIVITY OF WITHANIA SOMNIFERA

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Abstract

Ethnopharmacological relevance:

Withania somnifera (L.) Dunal (Ashwagandha, WS) is one of the extensively explored Ayurvedic botanicals. Several properties including immunomodulation, anti-cancer and neuro-protection of the botanical have been reported. Even though, in indigenous medicine, WS is well known for its immunomodulatory activity, the molecular mechanism of immunomodulation has not been elucidated.

Aim of the study

This study aimed the evaluation of the immunomodulatory effect of WS using network ethnopharmacology technique to elucidate the in silico molecular mechanism.

Materials and methods

Databases- DPED, UNPD, PubChem, Binding DB, ChEMBL, KEGG and STRING were used to gather information to develop the networks. The networks were constructed using Cytoscape 3.2.1. Data analysis was performed with the help of Excel pivot table and Cytoscape network analyzer tool.

Results

Investigation for WS immune modulation mechanism identified five bioactives that are capable of regulating 15 immune system pathways through 16 target proteins by bioactive-target and protein-protein interactions. The study also unveils the potential of withanolide-phytosterol combination to achieve effective immunomodulation and seven novel bioactive-immune target combinations.