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Biophysical characterization of biologically active protein from *Withania somnifera*

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Most of the plant based pharmacological active constituents are secondary metabolites which are small and simple in architecture. However, these secondary metabolites are expressed in small quantities and are synthesized at particular developmental stages that make their extraction and purification very cumbersome. Due to these shortfalls, an increased attention has been diverted towards other effective plant based pharmaceutics, i.e., proteins. These plant based protein pharmaceutics have greatly expanded the field of molecular pharmacology probably due to their therapeutically favorable properties like higher target specificity and pharmacological potency as compared to the traditional small molecule drugs Keeping this in mind, the study was devised to purify a pharmacologically active protein from *Withania somnifera* for its structural and functional characterization. We have been so far able to isolate and purify a 42 kDa protein from this plant using anion exchange followed by gel filtration chromatography (sephadex G 100). The purity of the protein was confirmed by 12% SDS-PAGE and single band was found at around 42 kDa. Identification of the protein was carried out by MALDI-TOF/MS using peptide mass fingerprinting method. Further, the purified protein was characterized for its secondary structural elements using Circular Dichroism spectropolarimetry.