

# ***Introduction***

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## 1.0 INTRODUCTION

Among the God gifted resources of the nature, plants are the innumerable fascinating revelations that have always played an inseparable role in the fulfillment of the basic requirements i.e., food, shelter, cloth and good health of man since its very existence. Higher plants are the ultimate and renewable solar-powered biochemical factories manufacturing both primary and secondary metabolites from air, water and minerals.

Plants have been extensively used as medicine for the treatments of different ailments since time immemorable in all known cultures. In many parts of the world, traditional medicine is still used to provide the major part of primary health care. In ayurvedic medicines plant materials such as foliage, roots, flowers, fruits, seeds and biochemical and or physiological by-products of plants may be used as such or in other forms like extracts, infusions, decoctions, powders etc and naturally available chemical compounds isolated from them to produce drugs for human and veterinary use.

More than 25% of prescribed drugs and nearly all recreational chemical substances, including caffeine in coffee, nicotine in tobacco, theophylline in tea, theobromine in chocolate and many other psychoactive substances throughout the world are obtained from plants. Thus the medicinal herbs **have filled medicines bag, cosmetic bowel, culinary spice jars, perfume vials and dry pots** for centuries.

The World Health Organization has estimated that the majority of the world's population depends on botanical medicines for basic health care needs (Akerle, 1985). In the last 100-150 years, knowledge about the active constituents of natural resources has been greatly expanded. A great deal of scientific research on medicinal plants has generated a lot of interest about their effects on human and livestock and has resulted in the isolation of several principles from plants through the use of bio-assay directed isolation techniques.

It is now widely accepted that the use of modern isolation and spectroscopic techniques for structural determination and biological screening methods can lead to the development of new potential medicines for treating a variety of human sufferings.

*Withania somnifera* in view of its varied therapeutic potential is a subject of considerable modern scientific attention. *Withania somnifera* also referred to as 'Ashwagandha' in the Indian system of medicine, is a central nervous system (CNS)-active herb that has been used for various neurological disorders.

*Withania somnifera* holds a place in the ayurvedic traditions similar to Korean ginseng in Chinese therapies. For that reason, *Withania somnifera* has been often referred to as Indian ginseng. The roots and leaves of *Withania somnifera* are used as drugs. Most of the herbal medicine available is derived from the roots of the plant. The commercial success largely depends on quality and yield of root.

The withanolides are steroidal lactones and bear resemblance, both in action and appearance, to the active ginsenosides of *Panax ginseng*. Within Indian traditional medicine, this drug is highly esteemed for being able to impart long life, youthful vigour and intellectual power.

Withanolides in *Withania somnifera* roots can be classified as withanolide aglycones and withanolide glycosides. These withanolide glycosides are otherwise called as withanosides when administered for the treatment of diseases metabolized into withanolide aglycones by the intestinal microflora and then absorbed into the blood stream. But under diseased conditions the intestinal microflora gets altered and as a result the conversion of withanolide glycosides to aglycones does not occur thereby the administered drugs are excreted in urine. Thus for the effective treatment of diseases the withanolide aglycones are mostly preferred (Kuboyama *et al.*, 2006).

The objective of the present study is to

- ✓ Identify the best solvent for the extraction of withanolide glycosides from *Withania somnifera* roots.
- ✓ Purify the withanolide glycosides from *Withania somnifera* roots by silica gel column chromatography.