significantly improved dementia rating scores along with the AD clinical assessment cognitive subscale in a study with 30 AD patients at 16 weeks (Akhondzadeh et al. 2003b). Rosmarinic acid inhibited Aβ fibril formation and destabilized the fibrils. In addition, it prevented Aβ-induced tau protein hyperphosphorylation (Iuvone et al. 2006).

9.3.13 *Withania somnifera*

W. somnifera is known as a nerve tonic and attenuates neuritic atrophy, which leads to neurodegenerative disorders. Ashwagandha helps the body to alleviate stress and is used immensely as an adaptogen. Adaptogens from other sources are stimulating, but ashwagandha invokes a calming effect not only in AD patients, but also in mammals (Auddy et al. 2008). Of all the steroid compounds in ashwagandha, withanamides have a great potential to scavenge ROS that are produced at the initiation and progression of AD, and to prevent amyloid plaques that trigger cell death in neurons (Jayaprakasam et al. 2010). Cognition and memory improvement was evidenced from the increased cholinergic activities in rats, thus increasing ACh content and eventually decreasing AChE activity (Schliebs et al. 1997). The semipurified root extract of ashwagandha recuperated behavioral defects, lessened plaque loads and prevented accumulation of Aβ in mice with AD (Sehgal et al. 2012). The roots are the source for glycowithanolides withaferin-A and sitoindosides VII-X. These compounds recuperate the cognitive defects in the AD model and attenuate the dendritic and synoptic losses in mice (Kuboyama et al. 2006). In addition, these compounds enhance the outgrowth of axons and dendrites and induce synaptogenesis (Tohda et al. 2000). The oral administration of these metabolites from *W. somnifera* reduces the symptoms of AD. *W. somnifera* is an excellent anti-AD plant, and further clinical trials will make it an effective therapeutic against AD.

9.4 CONCLUSION

The benefits offered by plants as AD therapeutics are immense: they are inexpensive, are taken as food supplements and contain fewer side effects. The dietary supplementation of medicinal plants' bioactive components in daily life offers great promise in the prevention of AD. Such bioactive components possess antioxidant properties, memory enhancement, toxicity prevention and cognitive function improvement. These bioactive principles from medicinal plants reduce neurodegeneration through interaction with neuronal signaling pathways. This routine supplementation prevents the onset of many neurodegenerative diseases in addition to cognitive improvement. Multiple factors are responsible for the pathogenesis of AD; therefore, one therapeutic approach will end up incompetent. The plants that offer multicomponents with a wide range of therapeutic targets is appealing and promising, and should receive greater attention for AD treatment. Future research should head in the direction of including two or more plant constituents that could serve as multipotent agents in AD models and patients. The efficacy of these plants and their active principles necessitate a rigorous assessment before being utilized for AD therapeutics.