Abstract:
An augmented brain renin angiotensin system activity has been shown to be involved in pathophysiology of Alzheimer’s disease. Drugs acting by manipulating RAS such as ACEIs and ARBs could have potential role in preventing cognitive deterioration seen in Alzheimer’s and other forms of dementia. The present study was undertaken to evaluate effects of structurally heterogeneous ACEIs and ARBs on learning and memory, cholinergic activity, antioxidant activity and hippocampal morphology using scopolamine-induced amnesia model. Two doses, each of ACEIs, namely, ramipril, fosinopril and lisinopril, and ARBs, namely, telmisartan, losartan, olmesartan and valsartan, were administered orally for four weeks followed by scopolamine intraperitoneally prior to experimental procedures. The results showed that higher doses of ramipril, fosinopril, telmisartan and olmesartan significantly reversed scopolamine-induced amnesic deficits ($p<0.001$) in all learning and memory paradigms. Further, administration of ACEIs and ARBs prevented hippocampal degeneration and ameliorated scopolamine-induced impairment of cholinergic function and antioxidant activity. Differential effects were noted between ACEIs and ARBs that may be attributed to distinct differences in their chemical structures and pharmacokinetic features. RAS inhibitors are one of the commonly used drugs for hypertension, and they may play an important role in preventing memory deficits in elderly patients with both hypertension and dementia.