ABSTRACT

This study comprised of solvent extraction of the aerial parts of *Ephedra gerardiana*, *Syzygium aromaticum* and *Nicotinia Tabaccum* followed by isolation and derivatization of active components; ephedrine **1** from *E. gerardiana*, nicotinic acid **2** from tobacco leaves eugenol **3** from cloves. These compounds were further derivatized namely 1-chloro-*N*-methyl-1-phenylpropan-2-amine **(1a),** 1- methoxy-N-methyl-1-phenylpropan-2 amine hydrochloride **(1b)** ,(cyanosulfanyl)(1-hydroxy-1-phenylpropan-2-yl)ammonium **(1c)** ,2-(methylamino)-1-phenylpropan-1-ol - sulfane dioxide (1:1) **(1d),** pyridine-3-carbonyl chloride **(2a)** , pyridine-3-carbohydrazide **(2b),** ethyl pyridine-3-carboxylate **(2c),** *N'*-[(*E*)-phenylmethylidene]pyridine-3-carbohydrazide **(2d)** , pyridine-3-carbonyl thiocyanate **(2e)** , 2-methoxy-4-(prop-2-en-1-yl)phenol **(3),** 2-methoxy-4-(prop-2-en-1-yl)phenyl benzoate **(3a)** , 2-methoxy-4-(prop-2-en-1-yl)phenyl acetate **(3b)** and subjected to various biological activities such as Reactive Oxygen scavenging (ROS) and Enzyme inhibition assay. The compounds were characterized by spectroscopic studies. Bioactive assays showed that out of all these compounds ephedrine and its derivatives show significant inhibitory potential and nicotinic acid also showed somewhat satisfactory results but eugenol didn't count in the list of potent inhibitory potential against enzyme but does show significant results against ROS inhibition. The inhibition potential against AChe by the *E. gerardiana* shows 56.25%, *N.tabacuum* extract 52% and *S.aromaticum* extract 49.5% this shows that ephedra extract could be used to cure CNS disorders. The isolated compound **1, 2** and **3** shows significant results as compared to their synthesized derivatives. The ROS inhibitiory potential of all the extracts and particularly eugenol extract shows 85% and its derivatives show significant and reproducible results. It can be further research in near future against the cure of various nervous chronic disorders.