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Syntheses and Antioxidant Screening of Pyrazole-4-Carboxaldehyde Derivatives

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ABSTRACT

Nine new derivatives of pyrazole-4-carboxaldehydes **(Va-i)** have been synthesized by acetic acid mediated condensation of different aromatic ketones with phenylhydrazines in ethyl alcohol to afford different phenylhydrazones. Phenylhydrazones so prepared were further allowed to react with two moles of DMF-$POCl_3$ adduct (Vilsmeier Haack reagent) in the DMF at 60-70°C for 6 hours with formation of immonium perchlorate. Introduction of phenyl ring at first & third position of pyrazole may increase the antioxidant activity. The participation of the C=C bond is important in stabilizing the antioxidant radical by resonance. Introduction of electron releasing groups on phenyl rings attached to heterocycles increase the electron donating capacity of antioxidants. Further more on alkaline hydrolyses (NaOH) they afforded different pyrazole-4-carboxaldehyde derivatives. The structures of synthesized compounds have been characterized on the basis of IR, 1H-NMR, ESI-MS and elemental analysis. All the synthesized compounds were screened for antioxidant activity. In order to neutralizing the threat of free radicals to the tissues and cells, body enzymes take participate include: glutathione peroxidise (GSH), superoxide dismutase (SOD) and catalase Antioxidants may intervene with these free radicals at different levels in the oxidative process. In FRAP assay, increased absorbance of the compounds with concentration indicates increased reducing power. Compounds with higher concentrations showed a higher reducing power. The reducing power showed good linear relation (R^2) in both standard as well as compounds. These results clearly reveal that compounds have antioxidant activity.

KEYWORDS: 1-H-pyrazole-4-carboxaldehyde; Pyrazole aldehyde derivatives; NMR; Mass; IR spectroscopy; Elemental analysis

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