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Synthesis and Evaluation of Antioxidant Behavior of Some Indole-Based Melatonin Derivatives

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Abstract : Reactive oxygen species (ROS) and oxidative stress can cause fatal damage to essential cell structures, including DNA. It is known that use of antioxidants could be advantageous in the prevention of various diseases such as cancer, cardiovascular diseases and neurodegenerative disorders. Since antioxidant properties of the indole ring-containing melatonin (MLT) has been described and evaluated, MLT-related compounds such as MLT metabolites and synthetic analogues are under investigation to determine which exhibit the highest activity with the lowest side-effects. Owing to indole and hydrazones appealing physiological properties and are mostly found in numerous biologically active compounds a series of indole-7-carbaldehyde hydrazone derivatives were synthesized, characterized and in vitro antioxidant activity was investigated by evaluating their reducing effect against oxidation of a redox-sensitive fluorescent probe. Cytotoxicity potential of all indole-based MLT analogues was investigated both by lactate dehydrogenase leakage assay and by MTT assay. This work was supported by The Scientific and Technological Research Council of Turkey (TÜBİTAK) Research and Development Grant 112S599.

Keywords : melatonin, antioxidant activity, indole, hydrazone, oxidative stress
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