



## Design and Bio-evaluation of Novel Hydrazone-Hydrazones Derived from 4-Acetyl-N-Substituted Benzenesulfonamide

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**Abstract**—In this research, a series of hydrazine-hydrazone derivatives (**Ia-g**), (**IIa-h**) were synthesized to discover new antioxidant and anticholinesterase agents. The structures of synthesized compounds were characterized by spectroscopic data using UV, IR, <sup>1</sup>H, <sup>13</sup>C NMR, mass spectroscopy, and elemental analysis. The bio-evaluation of the synthesized compounds (**Ia-g**), (**IIa-h**) were evaluated according to *in vitro* activity assays. The results of  $\beta$ -carotene/linoleic acid assay showed that among the synthesized compounds, the (**Ib**), (**Ie**), (**IIb-IIe**), and (**IIh**) compound exhibited higher activity for the lipid peroxidation inhibitory activity. In the DPPH free scavenging activity and the cation radical scavenging activity in ABTS<sup>•+</sup> activity, compound (**IIb**) was found to be more active. In the CUPRAC reduced power assay, the A<sub>0.5</sub> values of all synthesized compounds were better than  $\alpha$ -TOC. In AChE assay, compound (**IIb**) exhibited the most activity with IC<sub>50</sub>=11.12±0.74  $\mu$ M, while the compounds (**Ib-g**) and (**IIb-h**), exhibited excellent activity than the positive standard galantamine (IC<sub>50</sub>= 46.06±0.10  $\mu$ M) in the BChE assay.

**Keywords:** sulfonamide, hydrazone, antioxidant activity, anticholinesterase inhibitory activity, Lipinski's rules

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