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STUDY OF THE ANTIOXIDANT PROPERTIES OF SOME METHYLPHENYLTHIOSEMICARBAZONES

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Antioxidants are important compounds that reduce or neutralize free radicals, thus protecting cells from oxidation. Considerable research has been directed towards the identification of new antioxidants to prevent radical damages.

Due to the presence of donor atoms such as N, S, the thiosemicarbazide backbone has been extensively studied over the last 70 years, Therefor numerous thiosemicarbazide derivatives as substituted thiosemicarbazones at N (4) and N (1) of aliphatic, aromatic and heteroaromatic carbonyl compounds were synthesized and evaluated for antitumor, antimicrobial, cytotoxic and antioxidant activity.

In order to supplement the data on agents with potential biological activity, three N4-n- methylphenylthiosemicarbazides were synthesized, and subsequently condensed with 2- hydroxy-3-methoxybenzaldehyde (o-vanillin). The antioxidant activity of the compounds was then evaluated by analysis of 1,1-diphenyl-2-picryhydrazyl DPPH and 2,2'-azino-bis (3- ethylbenzothiazole-6-sulfonic acid) ABTS and compared with that of trolox.

From the results obtained from the antioxidant activity of the synthesized compounds it can be concluded that the introduction of a substituent such as the phenyl group at N (4), in the thiosemicarbazide backbone, leads to biologically active compounds. The antioxidant properties are amplified with the substitution at N (1), by introducing the carbonyl fragment. All the synthesized compounds showed higher values than the control sample, against the radical cations ABTS and the radical DHHP. They are in the next phase of testing for use as medicines.

№	Name of new compounds	ABTS•+ radical cation scavenging activity IC_{50},μM/L	DPPH• radical scavenging activity IC_{50},μM/L
1	*N*-(2-methylphenyl) hydrazinecarbothioamide	16,2	32,1
	2-(2-hydroxy-3-methoxybenzylidene)-*N*-(2-methylphenyl) hydrazinecarbothioamide	**15,2**	***12,6***
2	*N*-(2,4-dimethylphenyl) hydrazinecarbothioamide	15,3	34,2
	2-(2-hydroxy-3-methoxybenzylidene)-*N*-(2,4-dimethylphenyl) hydrazinecarbothioamide	**11,2**	***28,5***
3	*N*-(2,4,6-trimethylphenyl) hydrazinecarbothioamide	14,4	31,4
	2-(2-hydroxy-3-methoxybenzylidene)-*N*-(2,4,6-trimethylphenyl)hydrazinecarbothioamide	**11,8**	***43,8***
4	Trolox/ control sample	**26,3**	***48,9***

Keywords: antioxidant properties, DPPH• radical scavenging activity, free radicals, N4-n-methylphenylthiosemicarbazides.