

**TOTAL ANTIOXIDANT CAPACITY OF SEVERAL SYNTHETIC PHENOLS BY A CHEMILUMINESCENCE METHOD**

Liliana Lungu<sup>1</sup>, Vasile Dinoiu<sup>1</sup>, Andrei Florin Danet<sup>2</sup>, Claudia-Valentina Popa<sup>2</sup>

<sup>1</sup>*Institute of Organic Chemistry, C.D. Nenitzescu, Spl. Independentei 202B, 060023, Bucharest, Romania*

<sup>2</sup>*University of Bucharest, Faculty of Chemistry, Sos. Panduri 90-92, 050657, Bucharest, Romania*

\*Corresponding author e-mail address: [popa\\_valentina2006@yahoo.com](mailto:popa_valentina2006@yahoo.com)

The following synthetic compounds: 2,6-di-*tert*-butylphenol (**1**), 2,4-di-*tert*-butylphenol (**2**), N,N-dimethyl-3,5-di-*tert*-butyl-4-hydroxybenzylamine (**3**); 3,5-di-*tert*-butyl-4-hydroxybenzyl hydrazine (**4**); 1-(3',5'-di-*tert*-butyl-4'-hydroxybenzyl)-3,5-dimethylpyrazole (**5**); 1-(3',5'-di-*tert*-butyl-4'-hydroxybenzyl)-3-methylpyrazol-5-one (**6**) and 1-(3',5'-di-*tert*-butyl-4'-hydroxybenzyl)-3,5-diphenylpyrazole (**7**) were studied for their total antioxidant capacity (TAC). All compounds are sterically hindered phenols. Of these the first two are commercially available and (**3**) - (**7**) were synthesized in laboratory [1]. TAC of the compounds dissolved in ethanol : EDTA 2x10<sup>-4</sup>M=80% (v/v) solution was studied by means of an „in batch” chemiluminometric method based on luminol-Co(II)/EDTA-H<sub>2</sub>O<sub>2</sub> system [2]. Calibration curves for trolox (5x10<sup>-6</sup> and 10<sup>-3</sup>M) and gallic acid (10<sup>-5</sup> and 2x10<sup>-3</sup>M) were drawn and results were expressed as % Trolox equivalents (TE) and % gallic acid equivalents (GAE). Of the seven compounds analyzed, (**5**) has the highest antioxidant capacity (% TE = 27.3 ± 2.4 and % GAE = 63.7 ± 5.5) followed by (**2**) (% TE = 2.31 ± 0.13 and % GAE = 6.10 ± 0.030) and the other compounds with smaller values (< 0.5 % TE and <1.7% GAE) of TAC.

**References:**

1. V. Dinoiu, J. Herdan, A. Meghea, M.D. Gheorghiu, A.T. Balaban, Rev. Roum. Chim., 39, 1994, 949.
2. C.V. Popa, I.C. Farcasanu, S. Jipa, T. Zaharescu, A.F. Danet, Rev Chim. 63, 2012, 715.