

INFORMATION ON DOCTORAL THESIS

1. Full name: NGUYEN THI SON

2. Sex: Female

3. Date of birth: 24/4/1979

4. Place of birth: Hanoi

5. Admission decision number: 2259/SĐH, date 7/12/2006 by President of Vietnam National University, Hanoi.

6. Changes in academic process: None

7. Official thesis title: Synthesis and properties of some acetamidoaryl-1,3,4-oxadiazol-2-thiol.

8. Major: Organic Chemistry

9. Code: 62 44 27 01

10. Supervisors: Assoc.Prof.Dr.Sc. Luu Van Boi

11. Summary of the new findings of the thesis

- Have been synthesized 7 acetamidobenzoyl hydrazide derivatives from ester of cacboxylic acid by microwave-assisted method. The experimental results showed that the yields were the same while reaction time was 9-10 h shorter compared with the conventional methods;

- Have been successfully applied the new, effective and more environmentally friendly method - thiocacbamoylation of acetamidobenzoyl hydrazides by tetramethylthiuram disulphide for synthesis of 7 new 5-(acetamidoaryl)-1,3,4-oxadiazole-2-thiols;

- Have been carried out the reaction between obtained 5-(acetamido-aryl)-1,3,4-oxadiazole-2-thiols with α -chloroacetanilide. The experimental results showed that in alkaline medium and with temperature of above 60°C reaction transformed further to form 5-(acetamidoaryl)-2-arylamino-1,3,4-oxadiazole, exception is for N- α -chloroacetanilide containing NO₂ group in benzen ring;

- Have been determined the mechanism of transformation of 2-(N-4-R-arylcacboxamidomethylthio)-5-(acetamidoaryl)-1,3,4-oxadiazole; there is internal molecular attack of generated in alkaline medium amide anion on carbon atom C-2 of oxadiazole ring to form 5-(acetamidoaryl)-2-arylamino-1,3,4-oxadiazole and thioglycolic acid;

- Have been optimized the conditions of the reaction between 5-(acetamidoaryl)-1,3,4-oxadiazole-2-thiols with α -chloroacetanilides and successfully synthesized 50 new 2-(N-arylcacboxamidomethylthio)-5-(acetamidoaryl)-1,3,4-oxadiazoles and 18 5-(acetamidoaryl)-2-arylamino-1,3,4-oxadiazoles;

- Have been researched on identification of the obtained products by IR-, MS- and NMR spectroscopy. Results showed that their structure met the earlier predicted;

- Have been tested the biological activities of obtained 2-(N-arylcacboxamidomethylthio)-5-(acetamidoaryl)-1,3,4-oxadiazoles. Test results showed that the most of synthesized substances process anti-bacterial and anti-fungal activities.

12. Paratical applicability, if any:

Thiocacbamoylation of hydrazides by tetramethylthiuram disulphide is one of the best methods for the synthesis of 1,3,4-oxadiazole-2-thiols. 1,3,4-oxadiazole-2-thiol derivatives's synthesized by this method has high performance, reasonable price increases the possibility of using these compounds as precursors in organic synthesis, especially synthesis of biologically compounds

13. Further research directions, if any

Based on the mechanism had been found, to construct the new methods for the synthesis of 5-(subtituted)-2-arylamino-1,3,4-oxadiazoles on the basis of the reaction of 1,3,4-oxadiazole-2-thiols with arylamin derivatives in the presence of the α -cloaxetanilit.

Replace H in the SH group of 1,3,4-oxadiazole-2-thiol derivatives by the purine or pyrimidine base for synthesized the compounds that similar nucleoside which has biological activities to replace the anti-cancer and anti-virus drugs

14. Thesis-related publications:

1. Luu Van Boi, Nguyen Thi Son, Dao Thi Nhung, Hoang Duc Qang (2007), "Synthesis and properties of 5-[(4-acetamido-2-hydroxy) phenyl]-1,3,4-oxadiazole-2-thiol", the 4th national conference in technology and organic chemistry, pp. 12-17

2. Luu Van Boi, Nguyen Thi Son, Đao Thi Nhung (2008), "Synthesis and properties of 5-(5-acetamido-2-hydroxyphenyl)-1,3,4-oxadiazole-2-thiol", Journal of Science Vietnam National University, Hanoi XXIV (1), pp. 1-8.

3. Nguyen Thi Son, Luu Van Boi, Ha Minh Tu, Đao Viet Trung (2009), "Synthesis and properties of 5-[(4-acetamido-2-bromo) phenyl]-1,3,4-oxadiazole-2-thiol", Journal of Chemistry and Applications 9, pp. 45-48.

4. Nguyen Thi Son, Luu Van Boi, Nguyen Thi Huong, Ha Minh Tu (2009), "Synthesis and transformation of 5-(4-acetamidophenyl)-1,3,4-oxadiazole-2-thiol", Journal of chemistry 47, pp. 180-184.

5. Nguyen Thi Son, Ha Minh Tu, Luu Van Boi (2011), "Synthesis and properties of 5-(4-acetamido-2-chloroaryl)-1,3,4-oxadiazole-2-thiol", Journal of chemistry 49(1), pp. 25-30.

6. Luu Van Boi, Trinh Thai Ha, Nguyen Thi Son, Ha Minh Tu (2011) , "Synthesis and properties of 5-[(3-acetamido-4-methylphenyl)]-1,3,4-oxadiazole-2-thiol", Journal of Science Vietnam National University, Hanoi 27(3), pp. 145-153.