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NOTE

Synthesis and Characterization of N,N′-1,2-ethylene-*bis*(4-methyl phenyl sulfonimide) as a Novel Sulfonimide

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In present studied, the synthesis and characterization of N,N′-1,2-ethylene-*bis*(4-methyl phenyl sulfonimide) is reported.

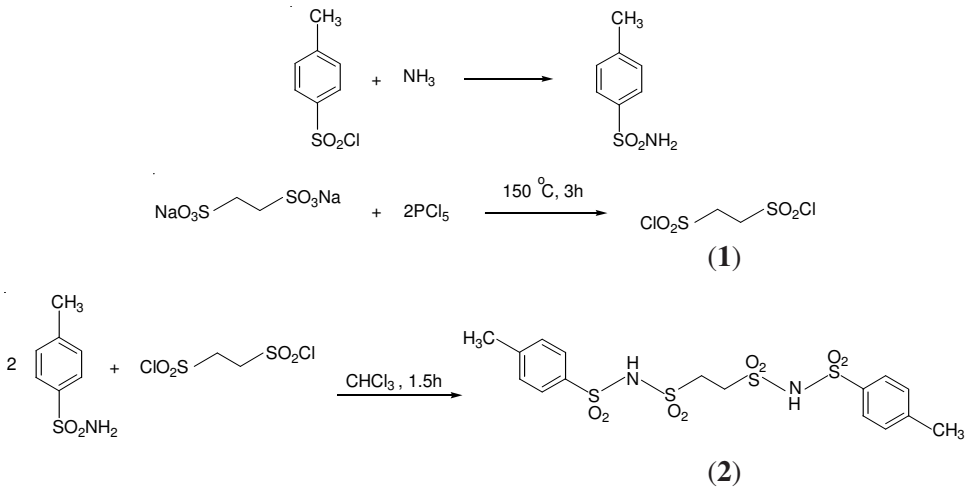
Key Words: Bacterial infections, Biological, Sulfonimide, Synthesis.

Sulfonamides are important compounds from both synthetic and biological viewpoints[1]. Sulfonamide drugs have been the first compounds which were used for prevention and treatment of bacterial infections[2]. N-Halo sulfonamides are also important reagents with many applications in organic synthesis[3,4]. So, in present studies the synthesis of N,N′-1,2-ethylene-*bis*(4-methyl phenyl sulfonimide) (**2**) is reported as a new compound.

Preparation of 1,2- ethane disulfonyl chloride (1): 10.00 g (0.043 mol) of 1,2-ethane disulfonate disodium salts and 26.86 g (0.129 mol) of phosphorus pentachloride were mixed and heated under a reflux condenser in an oil bath at 150 ºC for 3 h. Then the mixture was cooled and 100 mL of dry benzene was added to it and was heated for 0.5 h. The product was filtered and recrystallized from benzene; yield: 8.24 g (85 %); m.p. 34-36 ºC.

Preparation of N,N′-1,2-ethylene-*bis*(4-methyl phenyl sulfonimide) (2): In a 100 mL round-bottomed flask, 6.032 g (0.035 mol) of *para*-toluene sulfonamide was dissolved in 30 mL of chloroform, then the solution of 4.00 g (0.018 mol) of 1,2-ethane disulfonyl chloride in 30 mL chloroform was added dropwise. The mixture was refluxed for 1.5 h, then it was cooled and the product was collected by suction on a Buchner funnel and recrystallized from EtOH; yield: 7.87 g (90 %); m.p. 116-119 ºC. IR (KBr, ν_{max}, cm^{-1}): 3325, 3241, 3124, 2925, 1575, 1461, 1375, 1325, 1226, 1153, 1094, 908, 808. ^{1}H NMR (acetone-d_6/TMS): δ = 2.36 (s, 6H), 4.77 (s, 4H), 7.35-7.69 (dd, 8H). ^{13}C NMR (acetone-d_6/TMS): δ = 21.75, 59.54, 127.36, 130.61, 142.68, 143.76. Anal. calcd. (%) for $C_{16}H_{20}N_2O_8S_4$: C, 38.69; H, 4.06; N, 5.64. Found (%): C, 38.94; H, 4.26; N, 5.82.

The reactions that produce the title reagent was shown in **Scheme-I**. The applications of this reagent are under investigations.



Scheme-I

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