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Original Research Article

Synthesis of 4-nitro-benzamides for evaluation antimicrobial and disinfectant activity: Part-I

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ABSTRACT

4-nitro-benzamide derivatives have been synthesized and claimed in this research study. The compound VG1 and VG2 were synthesized by known methods. Ethylene diamine and isopropyl amine was dissolved in ethanolic 1 N NaOH separately and to it 4-nitro-benzoyl chloride was added. The products VG1 and VG2 were collected respectively.

1. Introduction

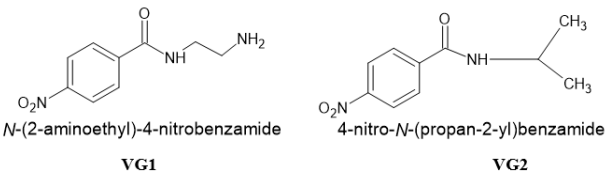
1. *Benzamides:*[1] It is an organic compound and simplest amide derivative of benzoic acid/ benzoyl chloride.
2. *Antimicrobial agent:*[2] It is an agent that kills or prevents the propagation or growth of bacteria or microorganisms including its viable spores in vivo or in vitro.
3. *Disinfectant:*[3] It is agent that prevents the growth or propagation of bacteria or microorganisms including viable spores on inanimate objects.

Synthesis of benzamide compound VG1 and VG2 have been reported in this paper. Further the compounds are synthesized for antimicrobial and disinfectant properties.

The benzamides have been shown antimicrobial properties in the literature and hence chosen for the present study.[4]

2. Materials and Methods

TLC was performed on 524nm Merk TLC plates. All chemicals were of synthetic grade and 98% purisis grade.



N-(2-aminoethyl)-4-nitrobenzamide — **VG1**

4-nitro-*N*-(propan-2-yl)benzamide — **VG2**

Figure 1: Compounds VG1 and VG2

TLC was eluted with 3 different solvents to check the purity of the compounds and visualized in Iodine chamber and further in UV chamber. The 1H-NMR was performed on Bruker 400 MHZ NMR. The synthetic scheme for the claimed compounds has been shown in Figure 2.

3. Synthetic Scheme

N-(2aminoethyl)-4-nitro-benzamide (VG1): An equimolar solution of ethylene diamine was dissolved in 10 ml of ethanolic 1 N NaOH in round bottom flask and to it 4-nitro-benzoyl chloride was added dropwise from dropping funnel with continuous stirring for 3 hrs at room temperature. The

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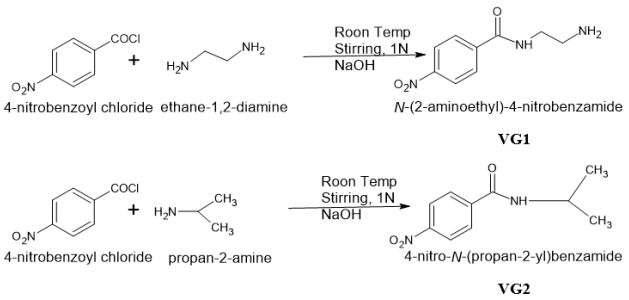

Figure 2: Synthetic Scheme for VG1 and VG2

stirring was conducted on magnetic stirrer with magnetic bead in the ethylene diamine solution. The compound that separated out after 3 hrs was dried. The compound was washed with ethanol and further dried again washed with NaOH and water and air dried.

1. *^{1} HNMR (δ shift in ppm):* 2.83 (2H, t, J = 7.2 Hz), 3.47 (2H, t, J = 7.2 Hz), 8.05-8.18 (4H, 8.11 (ddd, J = 8.6, 1.5, 0.5 Hz), 8.12 (ddd, J = 8.6, 1.8, 0.5 Hz))
2. *N-(propan-2-yl)-4-nitro-benzamide (VG2):* The procedure for the VG1 was repeated and in place of ethylene diamine, isopropyl amine was used. Rest of the procedure remains same.
3. *^{1} H-NMR (δ shift in ppm):* 1.16 (6H, d, J = 6.8 Hz), 4.26 (1H, sept, J = 6.8 Hz), 8.05-8.18 (4H, 8.11 (ddd, J = 8.6, 1.4, 0.5 Hz), 8.12 (ddd, J = 8.6, 1.8, 0.5 Hz)).

4. Results and Discussion

The compounds complied with spectral data and complied on TLC and 1H-NMR and confirmed to be synthesised.

5. Conclusion

The compounds VG1 and VG2 were synthesized and have been reported in this paper. The compounds shall be evaluated for disinfectant and antimicrobial properties and shall be reported in part II of this paper.

6. Source of Funding

None.

7. Conflict of Interest

None.

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