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Original Research Article

Synthesis of 2,6-dichloro-benzamides for evaluation antimicrobial and disinfectant activity: Part-I

Jaydip Vaishnav[1]*

[1]*Dept. of Pharmacy, CAYMET's Siddhant College of Pharmacy, Pune, Maharashtra, India*

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ABSTRACT

2,6-dichlorobenzamide derivatives have been synthesized and claimed in this research study. The compound JV1 and JV2 were synthesized by known methods. Ethylene diamine and isopropyl amine was dissolved in ethanolic 1 N NaOH separately and to it 2,6-dichlorobenzoyl chloride was added. The products JV1 and JV2 were collected respectively.

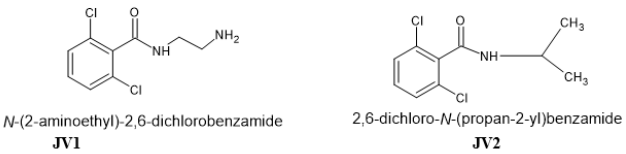
1. Introduction

1. *Antimicrobial agent*[1]*:* It is defined as the agents that kills or prevents the propagation of growth of microbes including viruses, and their viable spores, whether in vivo or in vitro.
2. *Disinfectant*[2]*:* It is property of chemical agent to sterilize and disinfect the inanimate objects, equipments, etc within minimum contact time killing all microorganisms including viruses and their viable spores. [1–3]

Further in literature the benzamide derivatives have been known and reported for their antimicrobial properties. [3–7]. The benzamide derivatives were synthesized by known literature procedure. [8]

2. Materials and Methods

TLC was performed on 524nm Merk TLC plates. All chemicals were of synthetic grade and 98% purisis grade. 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 before which FT-IR was performed on Perkin Elmer spectrophotometer. The synthetic scheme for the claimed compounds has been shown in Figure 2.



N-(2-aminoethyl)-2,6-dichlorobenzamide **JV1**

2,6-dichloro-*N*-(propan-2-yl)benzamide **JV2**

Figure 1: CompoundsJV1 and JV2

3. Synthetic Scheme

N-(2aminoethyl)-2,6-dichlorobenzamide (JV1): An equimolar solution of ethylene diamine was dissolved in 10 ml of ethanolic 1 N NaOH in round bottom flask and to it 2,6-dichlorobenzoyl chloride was added dropwise from dropping funnel with continuous stirring for 3 hrs at room temperature. The 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

* *Corresponding author*.
E-mail address: jaydipvaishnav0@gmail.com (J. Vaishnav).

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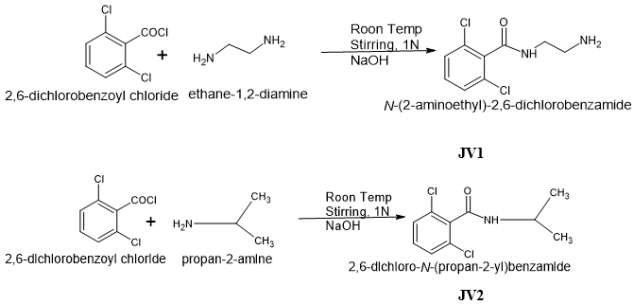

Figure 2: Synthetic scheme for JV1 and JV2

compound was washed with ethanol and further dried again washed with NaOH and water and air dried.[4]

1. *FT-IR (λ, cm^{-1}):* 3428.5, 3346.5, 3245.2, 3184.5, 3161.8, 2999.7, 2989.2, 2964.0, 2953.8, 1697.0, 1619.0, 1588.0, 1487.9, 1436.4, 1379.5, 1360.2, 1339.9, 1238.7, 1207.9, 1194.4, 1095.9, 981.4, 944.2, 893.8, 869.1, 759.8, 675.0, 631.1, 569.9
2. *^{1} HNMR (δ shift in ppm):* 2.83 (2H, t, J = 7.2 Hz), 3.47 (2H, t, J = 7.2 Hz), 7.28 (2H, dd, J = 7.9, 1.5 Hz), 7.45 (1H, t, J = 7.9 Hz).
3. *2,6-dichloro-N-(propan-2-yl) benzamide (JV2):* The procedure for the JV1 was repeated and in place of ethylene diamine, isopropyl amine was used. Rest of the procedure remains same.
4. *FT-IR (λ, cm^{-1}):* 3375.7, 3185.6, 3044.5, 2979.1, 2946.6, 1692.5, 1593.3, 1543.9, 1517.7, 1435.6, 1430.0, 1360.3, 1353.0, 1348.9, 1293.7, 1223.9, 1206.3, 1131.6, 1094.8, 1049.8, 1035.3, 946.4, 899.0, 773.4, 759.7, 751.4, 674.6, 635.8, 322.6, 569.6
5. *^{1} H-NMR (δ shift in ppm):* 1.17 (6H, d, J = 6.8 Hz), 4.18 (1H, sept, J = 6.8 Hz), 7.28 (2H, dd, J = 7.9, 1.5 Hz), 7.45 (1H, t, J = 7.9 Hz).

4. Results and Discussion

The compounds complied with all spectral data and complied with IR and NMR and confirmed to be synthesised.

5. Conclusion

The synthesized compounds JV1 and JV2, benzamide derivatives have been reported in this research paper. Evaluation of these agents for their antimicrobial and disinfectant properties shall be reported in Part- II & Part III of this paper.

6. Source of Funding

None.

7. Conflict of Interest

None.

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Author biography

Jaydip Vaishnav, Student

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