ZKG INTERNATIONAL

ISSN: 2366-1313

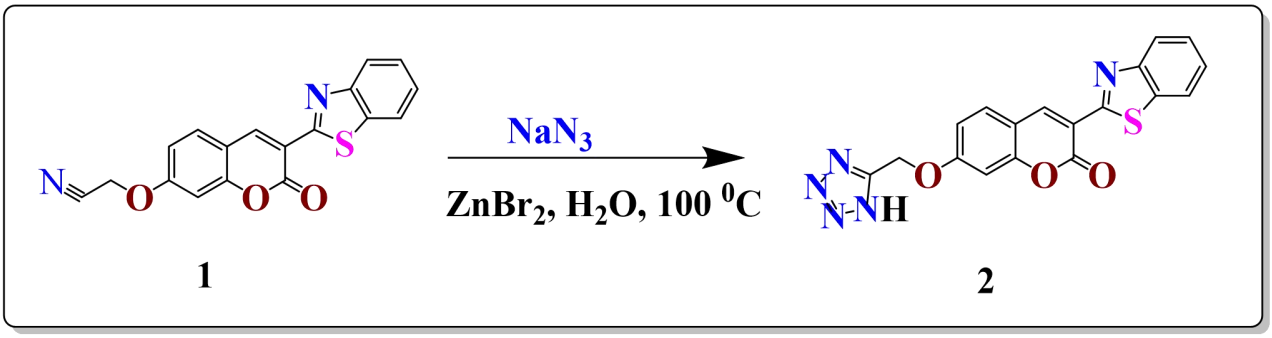
Synthesis, Characterization of 7-((1H-tetrazol-5-yl)methoxy)-3-(benzo[d]thiazol-2-yl)-2*H*-chromen-2-one

Pradeep Kumar Challa[1*], G. Manasa[1], Ambala Nageswara Rao[2]

[1 1*] Department of Chemistry, Anurag University, Hyderabad– 500088, Telangana State, India.
[2]Department of Chemistry, Sri Chaitanya Degree College, Wyra, Khammam- 507165 Telangana State, India.
Corresponding Author: *E-mail: cpradeepkumarhs@anurag.edu.in

ABSTRACT

Herein, we have depicted the synthesis of 7-((1*H*-tetrazol-5-yl) methoxy)-3-(benzo[d]thiazol-2-yl)-2*H*-chromen-2-one **(2),** interaction between2-((3-(benzo[d]thiazol-2-yl)-2-oxo-2H-chromen-7-yl) oxy) acetonitrile **(1)** through azide followed [3+2] *viz*cyclo addition by means of ZnBr2,water under heat to give desired tetrazole shown in Scheme I and further confirmed by spectral analysis.



Scheme I Synthesis of 7-((1*H*-tetrazol-5-yl) methoxy)-3-(benzo[d]thiazol-2-yl)-2*H*-chromen-2-one

KEYWORDS Tetrazole, azide,cyclo addition

INTRODUCTION

Tetrazole is a key structural motif in heterocyclic chemistry, it has been initiated in many drug molecules [1-2] and these possess an extensive biological activity. [3-10]In organic synthesis and has a broad range of tenders in industrial interest, as well as the synthesis ofpharmaceuticals, polymers, herbicides and other material.[11]

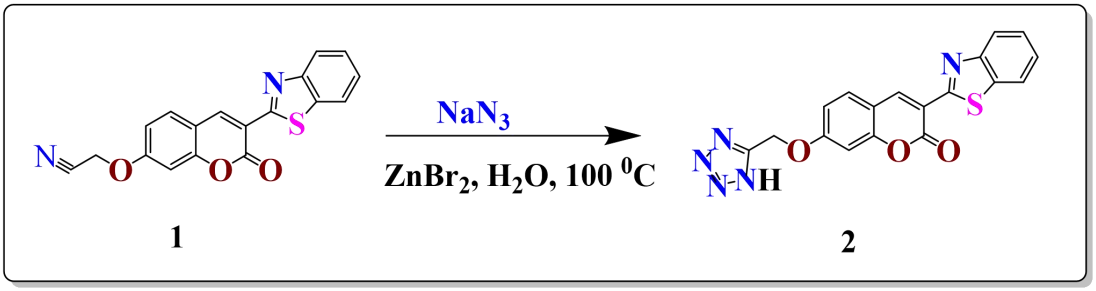
N-containing heterocycles, tetrazole basedmolecules have fascinated considerable attention due to theirpotential biological tenders towards anti-ulcer,[12] anti-allergic, [13] anti-hypertensive,[14] anti-leishmanial,[15] anti-cancer, [16] and anti-proliferative activities.[17]

ISSN: 2366-1313

EXPERIMENTAL SECTION

Material and Methods

All the commercially available chemicals and reagents were further used without purification. The purity of the compound was analysed by TLC using Merck 60F254 silica gel plates. The ^{1}H &^{13}CNMR spectra recorded with a Mercury Plus spectrometer had chemical shifts that were referenced to TMS. ESI mass spectra were obtained using a Shimadzu QP5050A quadrupole-based mass spectrometer. Herein, we are reporting the synthesis of 7-((1*H*-tetrazol-5-yl) methoxy)-3-(benzo[d]thiazol-2-yl)-2H-chromen-2-one in Schem I.



Scheme I

RESULTS AND DISCUSSIONS

General procedure for the synthesis of 7-((1H-tetrazol-5-yl) methoxy)-3-(benzo[d]thiazol-2-yl)-2*H*-chromen-2-one(2):

2-((3-(benzo[d]thiazol-2-yl)-2-oxo-2*H*-chromen-7-yl) oxy) acetonitrile **(1)**(1 mmol), sodium azide (1.5 mmol) and zinc bromide (1.5 mmol) in water was stirred at 100°C for 4 h, mixture was poured into aqueous hydrochloric acid. Precipitate was recovered by filtration and recrystallised from ethanol to give desired product as pale white solid; Yield: 80 %; mp 148-150 °C; MF: $C_{18}H_{11}N_5O_3S$; ESI Mass:377 [M^+];^{1}H NMR (500 MHz, DMSOd6, δH ppm): 9.86 (s, 1H broad N-H), 8.77 (s, 1H), 8.03 (d, *J* = 6.9 Hz, 1H), 7.95 (d, *J* = 8.5 Hz, 2H), 7.44 (p, *J* = 7.5 Hz, 2H), 7.15 (s, 1H), 7.08 (d, *J* = 7.5 Hz, 1H), 5.22 (s, 2H). ^{13}C NMR (125 MHz, DMSO-d6, δCppm):169.41, 164.46, 162.69, 157.59, 155.33 , 152.49, 139.06, 136.29, 130.25, 126.92, 125.48, 123.70, 122.70, 118.05, 114.89, 113.95, 103.65, 54.33.

CONCLUSION

An efficient, one step synthesis of new7-((1*H*-tetrazol-5-yl) methoxy)-3-(benzo[d]thiazol-2-yl)-2H-chromen-2-one with promising yield is obtained.

ISSN: 2366-1313

REFERENCES

1. V.A. Ostrovskii, G.I. Koldobskii, R.E. Trifonov, *Comprehensive Heterocyclic Chemistry.*, 6, 257**(2008).**
2. D. Ashok, N. Nagaraju, M. Sarasija, B. Vijaya Lakshmi, *Journal of the Mexican Chemical Society.*,63(4), 123**(2019).**
3. D. Ashok, N. Nagaraju, M. Sarasija, B. Vijaya Lakshmi, *Journal of the Serbian Chemical Society.*,83(12), 1305**(2018)**.
4. D. Ashok, N. Nagaraju, B. Vijaya Lakshmi, M. Sarasija, *Russian Journal of General Chemistry.*,89, 1905 **(2019).**
5. P.B. Mohite, V.H. Bhaskar, *Advanced Pharmaceutical Bulletin*., 2, 31**(2012).**
6. A. Rajasekaran, S. Murugesan, K. Ananda Rajagopal, *Arch. Pharmacal Res*., 29, 535**(2006).**
7. J. Adamec, K. Waisser, J. Kunes, J. Kaustova, Archiv der Pharmazie: *An International Journal Pharmaceutical and Medicinal Chemistry.*, 338(8), 385**(2005)**.
8. R.S. Upadhayaya, S. Jain, N. Sinha, N. Kishore, R. Chandra, S.K. Arora, *European Journal of Medicinal Chemistry.*, 39(7), 579**(2004).**
9. R. Romagnoli, P.G. Baraldi, M.K. Salvador, D. Preti, X.H. Fu, J.Li, S.Z. Zhang, E. Hamel, R. Bortolozzi*, Journal of Medicinal Chemistry*., 55(1),475**(2012).**
10. B. Le Bourdonnec, C. Cauvin, E. Meulon, S. Yous, J. F. Goossens, F. Durant, J. P. Hénichart,
Journal of Medicinal Chemistry., 45(21), 4794**(2002).**
11. G. Bringmann, A.J. Price Mortimer, P.A. Keller, M.J. Gresser, J. Garner, M. Breuning, *AngewandteChemieInternational*., 44(34), 5384**(2005).**
12. M. Uchida, M. Komatsu, S. Morita, T. Kanbe, K. Yamasakiand K. Nakagawa, *Chem. Pharm. Bull*., **(1989)**, 37, 958–961.
13. R. E. Ford, P. Knowles, E. Lunt, S. M. Marshall, A. J. Penrose,C. A. Ramsden, A. J. Summers, J. L. Walker andD. E. Wright, *J. Med. Chem*., **(1986)**, 29, 538–549.
14. S. Hayao, H. J. Havera, W. G. Strycker, T. Leipzig andR. Rodriguez, *J. Med. Chem*., **(1967)**,
10, 400–402.
15. P. Purohit, A. K. Pandey, D. Singh, P. S. Chouhan,K. Ramalingam, M. Shukla, N. Goyal, J.Lal andP. M. Chauhan, *MedChemComm*.,**(2017)**, 8, 1824–1834.
16. C. G. Neochoritis, T. Zhao and A. D¨omling, *Chem. Rev*.,**(2019),** 119, 1970–2042.
17. F. Gao, J. Xiao and G. Huang, *Eur. J. Med. Chem*., **(2019),**184,111744.