

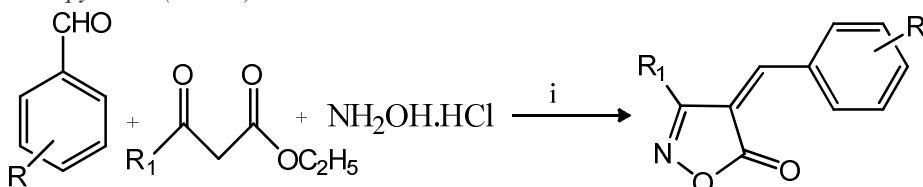
# A Convenient Green Protocol for the Synthesis of 4-Arylmethylidene-3-substituted-isoxazol-5(4H)-ones catalysed by Dimethylaminopyridine (DMAP)

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**Abstract:** Isoxazole motif containing heterocyclic compounds are important for their wide range of biological activities. Therefore, in the present article, I report a convenient and green protocol for the synthesis of 4-arylmethylidene-3-substituted-isoxazol-5(4H)-ones by the one pot three component reaction of aldehydes,  $\beta$ -keto ester and hydroxylamine hydrochloride catalyzed by Dimethylaminopyridine (DMAP).



1 (a-i) 2(a-b) 3 (4a-f), (5a-i)

**Scheme 1:** Reagent and conditions:(i) Dimethylaminopyridine (DMAP), H<sub>2</sub>O (5 mL), 70- 80°C, 6 to 25 min.

**Keywords:** Aldehyde,  $\beta$ -keto Ester, Hydroxylamine Hydrochloride, DAMP

## REFERENCES

- [1]. Simoni, D.; Roberti, M.; Invidiata, F. P.; Rondanin, R.; Baruchello, R.; Malagutti, C.; Mazzali, A.; Rossi, M.; Grimaudo, S.; Capone, F.; Dusonchet, L.; Meli, M.; Raimondi, M. V.; Landino, M.; D'Allesandro, N.; Tolomeo, M.; Arindam, D.; Lu.S.; Benbrook, D. M.J. Med. Chem. 2001, 44 (14), 2308-2318.
- [2]. (a) Zhang, X. H.; Zhan, Y. H.; Chen, D.; Wang, F.; Wang, L. Y. Dyes Pigm. 2012, 93, 1408-1415; (b) Zhang, X. H.; Wang, L. Y.; Zhan, Y. H.; Fu, Y. L.; Zhaia, G. H.; Wenc, Z. Y. J. Mol. Struct. 2011, 994, 371-378; (c) Tavares, A.; Arruda, B. C.; Boes, E. L.; Stefani, V.; Stassen, H.K.; Campo, L.F.; Bechtold, I.H.; Mario, A. A.J. Braz. Chem. Soc., 2012, 23, 881-888.; d) Altug, C.; Gunes, H.; Nucentini, A.; Monti, S. M.; Bounanno, M.; Supuran, C. T. Bioorg. Med. Chem. 2017, 25, 1456-1464.
- [3]. Cheng, Q. F.; Liu, X. Y.; Wang, Q. F.; Liu, L. S.; Liu, W. J.; Lin, Q.; Yang, X. J. Chin J. Org. Chem. 2009, 29, 1267-1271.
- [4]. (a) Buron, C.; Kaim, L.; Usla, A. Tetrahedron Lett. 1997, 38 (46), 8027-8030; (b) Mares, D.; Romagnoli, C.; Tosi, B.; Benvegeni, R.; Bruni, A.; Vicentini, C. B. Fungal Genet. Biol. 2002, 36(1), 47-57.
- [5]. (a) Rajanarendar, E.; Afza, Md.; Karunakar, D. Indian J. Chem. 2004, 43B, 168-173; b) Suresh, G.; Nadh, R. V.; Srinivasu, N.; Kaushal, K. Synth. Commun. 2016, 46, 1972-1980.
- [6]. Kwon, T.; Heimann, A. S.; Oriaku, E. T.; Yoon, K. J. Med. Chem. 1995, 38, 1048-1051.
- [7]. (a) Ghorab, M. M.; Bashandy, M. S.; Alsaidi, M. S. Acta Pharm. 2014, 64, 419-431; (b) Hamama, W. S.; Ibrahim, M. E.; Zoorob, H. H. J. Heterocycl. Chem. 2017, 54, 341-346; (c) Refat, H. M.; Fadda, A. A. Heterocycles 2015, 91(6), 1212-1226.
- [8]. Kumari, S.; Rajeswari, M.; Khurana, J. M. Australian J. Chem. 2016, 69, 1049- 1053.
- [9]. Al-Bogami, A. S.; Saleh, T. S.; Mekky, A. E. M.; Shaaban, M. R. J. Mol. Struct. 2016, 1121, 167-179.

- [10]. Kaur, M.;Kaur, A.; Singh, B.; Singh, B. J. Heterocycl. Chem. 2017, 54(1), 80-88.
- [11]. (a) Hallenbach, W.; Guth, O.; Seitz, T.; Wroblowsky, H. J.; Desbordes, P.; Wachendorff, N. U.; Dahmen, P.; Voerste, A.; Lo"sel, P.; Malsam, O.; Rama, R.; Hadano, H.; 2012, US Patent, Pub. No.: US 2012/0065063A1;(b) Hallenbach, W.; Gut, O.; Seitz, T.; Wroblowsky, H.J.; Desbordes, P.; Wachendorff, N. U.; Dahmen, P.; Voerste, A.; Lo"sel, P.; Malsam, O.; Rama, R.; Hadano, H.; 2011, WIPO Patent Application WO/2011/161035A1.
- [12]. (a) Demers, J. P.; Hageman, W. E.; Johnson, S. G.; Klaubert, D. H.; Look, R. A.; Moore, J. B. Bioorg. Med. Chem. Lett.1994, 4, 2451-2456.
- [13]. (a) Ishioka, T.; Kubo, A.; Koiso, Y.; Nagasawa, K.; Itai, A.; Hashimoto, Y. Bioorg. Med. Chem.2002, 10(5), 1555-1566; (b) Kafle, B.; Aher, N. G.; Khadka, D.; Park, H.; Cho, H. Chem. Asian J.2011,6(8),2073-2079.
- [14]. (a) Martin, D. G.;Chidester, C. G.;Mizsak, S. A.; Duchamp, D. J.;Baczynskyj, L.; Krueger, W. C.; Wnuk,R. J.; Meulman, P. A.The J. ofAntibiot.1975, 28, 91-93; (b) Bowden, K.; Crank, G.; Ross, W. J. J. Chem. Soc.1968, 1968, 172;
- [15]. Donleawy, J. J.; Gilbert, E. E. J. Am. Chem. Soc. 1937, 59, 1072.
- [16]. Juana, M. P.; Diego, J. R.ACS sustainable chem. &engg.,2015, 3 (9), 2343-2349.DOI: 10.1021/acssuschemeng.5b00689.
- [17]. Liu, Q.; Zhang, Y. N. Bull. Korean Chem. Soc.2011, 32, 3559-3560.
- [18]. Liu, Q., Hou, X. Phosphorus, Sulfur, Silicon, Relat. Elem.2012, 187, 448-453.
- [19]. Liu, Q.; Wu, R.T. J. Chem. Res.2011, 10,598-599.
- [20]. Mirzazadeh, M.; Mahdavinia, G. H. E-Journal of Chemistry2011, 9(1), 425-429.
- [21]. Kiyani, H. Org Chem: An Indian J.2013, 9, 97-101.
- [22]. Kiyani, H.; Ghorbani, F. Heterocycl. Lett.2013, 3, 145-153.
- [23]. Rikani, B.; Ashkan; Setamidineh, D; Orient j Chem.2016, 32, 1433-1437.
- [24]. Kiyani, H.; Ghorbani, F. Heterocycl. Lett.2013, 3, 359-369.
- [25]. Kiyani, H.; Ghorbani, F. Open J. Org. Chem. 2013, 1, 5-9.
- [26]. Kiyani, H.; Ghorbani, F. Elixir Org. Chem. 2013, 58 A, 14948-14950.
- [27]. Kiyani, H.; Ghorbani, F. Res. Chem. Intermed2015, 41(5), 2653-2664.
- [28]. H. Kiyani, F. GhorbaniJ. Saudi Chem. Soc.2017, 21, S112-S119.
- [29]. Mohammad, G.; Peyman, S. Z. Monatsh Chem. 2016, 147(2), 445-450.
- [30]. Amine, K. I.; Boulcina, R.; Boumoud, T.; Boumoud, B.; Debaché, A. Der PharmaChemica, 2016,8, 97-101.
- [31]. Kiyani, H.; Ghorbani, F. Res. Chem. Intermed.2015, 41, 7847-7882. (a) Setamidineh, D. D. J. Mex. Chem. Soc.2015, 59(3), 191-197; b) Davood
- [32]. Setamidineh, J.Serb. Chem. Soc, 2016, 81 (9) 971-978.
- [33]. Khandebharad, A. U.; Sarda, S. R.; Gill, G. H.; Agrawal, B. R. Res. J. Chem. Sci. 2015, 5,27-32.
- [34]. Kiyani, H.; Kanaani, A.; Ajloo, D.; Ghorbani, F.; Vakili, M. Res. Chem. Intermed.2015, 41, 7739-7773.
- [35]. Kiyani, H.; Darbandi, H.; Mosallanezhad, A.; Ghorbani, F.Res. Chem.Intermed.2015, 41, 7561-7579.
- [36]. Fozooni, S.; Hosseinzadeh, N.G.; Hamidian, H.; Akhgar, M.R. J. Braz. Chem. Soc.2013, 24, 1649-1655.
- [37]. Maddila, S. N.; Maddila, S.; van Zyl, W.E.; Jonnalagadda, S.B . Res. Chem. Intermed.2016, 42, 2553-2566.
- [38]. Saikh, F.; Das, J.; Ghosh, S. Tetrahedron Lett.2013, 54, 4679-4682.
- [39]. Ablajan, K.; Xiamuxi, H. Synth. Commun.2012, 42, 1128-1136.
- [40]. Cheng, Q. F.; Liu, X. Y.; Wang, Q. F.; Liu, L. S.; Liu, W. J.; Lin, Q.; Yang, X. J. Chin. J.Org. Chem,2009, 29, 1267-1271.
- [41]. Nakkalwar, S.L.; Patwari S.B.; Patel M.M.; Jadhav, V.B. Current Green Chem., 2018, 5, 122-128.
- [42]. HofleG., SteglichW., Synthesis (1972), 619.
- [43]. LitvinenkoL. M., KirichenkoA. I., Dokl. Akad.Nauk SSSR (1967), 176, 97.
- [44]. a) BerryD. J., DigiovannaC. V., MetrickS. S., MuruganR.,Arkivoc (2001), 201 ; b) SpiveyA. C., ArseniyadisS.,Angew. Chem. (2004), 116, 5552.

- [45]. HeinrichM. R., KlisaH. S., MayrH., SteglichW., ZipseH., Angew. Chem. (2003), 115, 4975.
- [46]. HassnerA., KrepkiL. R., AlexanianV., Tetrahedron (1978), 34, 2069.
- [47]. a) FuG. C., Acc. Chem. Res. (2004), 37, 542–547 ; b) DalkoP. I., MoisanL., Angew. Chem. (2004), 116, 5248.
- [48]. TabanellaS., ValancogneI., JacksonR. F. W., Org. Biomol. Chem. (2003), 1, 4254.
- [49]. JeongK. S., KimS. H., ParkH. J., ChangK. J., KimK. S., Chem. Lett.(2002), 1114.
- [50]. a) KawabataT., YamamotoK., MomoseY., YoshidaH., NagaokaY., FujiK., Chem. Commun. (2001), 2700; b) T. Kawabata, R. Stragies, T. Fukaya, Y. Nagaoka, H. Schedel, K. Fuji, Tetrahedron Lett.(2003), 44, 1545.
- [51]. ShawS. A., AlemanP., VedejsE., J. Am. Chem. Soc. (2003), 125, 13368.