Impact Factor:

ISRA (India)	= 3.117	SIS (USA)	= 0.912	ICV (Poland)	= 6.630
ISI (Dubai, UAE)	= 0.829	PIHII (Russia)	= 0.156	PIF (India)	= 1.940
GIF (Australia)	= 0.564	ESJI (KZ)	= 8.716	IBI (India)	= 4.260
JIF	= 1.500	SJIF (Morocco)	= 5.667	OAJI (USA)	= 0.350

SOI: [1.1/TAS](#) DOI: [10.15863/TAS](#)

International Scientific Journal Theoretical & Applied Science

p-ISSN: 2308-4944 (print) e-ISSN: 2409-0085 (online)

Year: 2019 Issue: 04 Volume: 72

Published: 26.04.2019 <http://T-Science.org>

QR – Issue

QR – Article

Turan R. Khankishiyeva
Researcher,
Baku State University
xankishiyeva.turan@mail.ru

Arzu Z. Sadigova
Researcher,
Baku State University

Rovshan H. Nazarov
Ph.D, The scientific researcher,
Baku State University

F.M. Muradova
Researcher,
Baku State University

Malahat M. Kurbanova
Ph.D, Professor of Chemistry,
Baku State University

Elnur Z. Huseyinov
Ph.D, The scientific researcher,
Baku State University

SYNTHESIS AND STRUCTURE OF ALLYL 3-OXO-2-(2-PHENYLHYDRAZONE) BUTANOATE

Abstract: Biologically active allyl 3-oxo-2-(2-phenylhydrazone) butanoate was synthesized in the presence of allyl 3-oxo-butanate and aromatic amine and structure was approved by the X-Ray method.

Key words: β -diketones, hydrazones, allyl 3-oxo-2-(2-phenylhydrazone) butanoate, X-Ray.

Language: English

Citation: Khankishiyeva T.R., Sadigova A.Z., Nazarov R.H., Muradova F.M., Kurbanova M.M., & Huseyinov E.Z. (2019). Synthesis and structure of allyl 3-oxo-2-(2-phenylhydrazone) butanoate. *ISJ Theoretical & Applied Science*, 04 (72), 364-366.

Soi: <http://s-o-i.org/1.1/TAS-04-72-45> **Doi:** <https://dx.doi.org/10.15863/TAS.2019.04.72.45>

Introduction

Now a day the field of β -diketones is a very exciting area of research because of biological activity [1-3]. β -Diketones are a group of commonly applied spectrophotometric reagents in analytical chemistry because of their capability to form complexes[4-9]. Furthermore, derivatives of these compounds are

widely used in the treatment of antioxidant, antiviral centered inflammatory diseases [10-12].

The purpose of the research is to study the structure of the from the mixture of aromatic amine and β -diketone through diazotization reaction. The diazotization reaction between allyl 3-oxo butanoate (I) and aniline led to allyl 3-oxo-2-(2-phenylhydrazone) butanoate (II).

Impact Factor:

ISRA (India)	= 3.117	SIS (USA)	= 0.912	ICV (Poland)	= 6.630
ISI (Dubai, UAE)	= 0.829	PIIHQ (Russia)	= 0.156	PIF (India)	= 1.940
GIF (Australia)	= 0.564	ESJI (KZ)	= 8.716	IBI (India)	= 4.260
JIF	= 1.500	SJIF (Morocco)	= 5.667	OAJI (USA)	= 0.350

The reaction was controlled by thin-layer chromatography (Sorbfil). The molecular structure of the obtained compound was determined by the X-ray method and deposited in the Cambridge Crystallographic Data Centre (CCDC 1537217). The compound ($C_{13}H_{14}N_2O_3$, $M_r = 146.26$), which was studied by the X-ray method, is a yellow crystalline

compound with sizes $0.2 \times 0.2 \times 0.2$ mm. The dimensions of the monocrystalline structure lattice units are $a = 8.7022(12) \text{ \AA}$, $b = 8.7472(12) \text{ \AA}$, $c = 9.3558(13) \text{ \AA}$, $\alpha = 107.090(2)^\circ$, $\beta = 109.747(2)^\circ$, $\gamma = 94.640(3)^\circ$, $V = 627.70(15) \text{ \AA}^3$, $z = 2$, $D_x = 1.205 \text{ mg/cm}^3$, $\mu = 0.08 \text{ m}^{-1}$, $\theta = 2.2\text{--}29.2^\circ$.

Figure 1. View of the crystal lattice of allyl-3-oxo-2-(2-phenylhydrazone) butanoate molecule.

The reaction and the purity of synthesized compounds were monitored by TLC. The structure of the compound was studied in the “Bruker APEX II CCD” diffractometer ($T = 100\text{K}$, $\lambda\text{MoK}\alpha$ -radiation, graphite monochromator, ϕ - and ω -scanning, $20\text{max} = 560$).

General method for the synthesis of allyl-3-oxo-2-(2-phenylhydrazone) butane. 0.0625 mol Aniline and 0.35 g KOH is dissolved 10 ml distilled water and placed in the three-neck flask. Amine was formed an alkaline mixture after completely dissolve. The solution of 0.0625 mol NaNO_2 in 2 ml distilled

water was added to the mixture and left to stir. 2 ml HCL was added drop by drop to the mixture by the controlling temperature (0°C). If the temperature rises above 0°C the ice is added to the mixture. The reaction is carried out at 0°C for 30 min. Then 0.0625 mol β -diketone and 0.5125 g CH_3COONa were dissolved 10 ml CH_3OH . The temperature of the mixture was cooled to 0°C and was added drop by drop to the previous mixture. The reaction is carried out at 0°C for 1 hour. The product was filtered and recrystallized in ethanol.

Impact Factor:	ISRA (India)	= 3.117	SIS (USA)	= 0.912	ICV (Poland)	= 6.630
	ISI (Dubai, UAE)	= 0.829	PIIHQ (Russia)	= 0.156	PIF (India)	= 1.940
	GIF (Australia)	= 0.564	ESJI (KZ)	= 8.716	IBI (India)	= 4.260
	JIF	= 1.500	SJIF (Morocco)	= 5.667	OAJI (USA)	= 0.350

References:

- Vaidya, S. R., Shelke., V. A, Jadhav, S. M., Shankarwar, S. G., & Chondhekar, T. K. (2012). Synthesis and characterization of β -diketones ligands and their antimicrobial activity. *Scholars Research Library*, 4(4) 18, 39-43.
- Annamalai, S., Balasubramaniam, A. P., Sabeta, K., & Rajnikant, V. (2011). Synthesis, spectral and RAHB studies on some arylhydrazones of β - diketones: crystal and molecular structure of 2-(2-(3-pyridyl)hydrazono)-5,5-dimethylcyclohexane-1,3-dione and 2-(2-(2-methoxyphenyl)hydrazono)-5,5 dimethylcyclohexane-1,3-dione. *Stuc. Chem.*, 22, 23-33.
- Jadhav, S. M., Shelke, V. A., Munde, A. S., Shankarwar, S. G., Patharkar, V. R., & Chondhekar, T. K. (2010). Synthesis, characterization, potontimetry and antimicrobial studies of transition metal complexes of a tridentate ligand. *J.Coord.Chem.*, 23, 41-53.
- Karvembu, R., Chinnasamy Jayabalakrishanan, & Natarajan, K. (2002). Thiobis (β -diketonato)-bridged binuclear ruthenium(III) complexes containing triphenylphosphine or triphenylarsine. *Trans. Met.Chem.*, 27, 574.
- Ryszard, G., Erkki, K., Henryk, J., Reijo, K., Maija, N., & Borys, O. (2001). Premidonance of 2-arylhydrazones of 1,3-diphenylpropane-1,2,3-trione over its proton transfer products. *J.Phys.Org.Chem.*, 14: 797-803.
- Lasri, J., et al. (2012). Solvent-dependent reactivates of acyclic nitrones with β -diketones: catalyst-free syntheses of endiones and enones. *Tetrahedron*, 68, № 35, pp. 7019-7027.
- Kumar, C. U., Sethukumar, A., & Prakasam, B. A. (2013). Synthesis and spectral studies of some 4H-pyran derivatives: Crystal and molecular structure of isobutyl 6-amono-5-cyano-2-methyl-4-phenyl-4H-pyran-3-carboxylate. *Journal of Molecular Structure*, 1036 (2013), 257-266.
- Lingaiah, B. P. V., et al. (2008). Efficient and convenient method for the synthesis of poly functionalized 4H-pyrans. *Synth.Comm.*, 34, 4431-4437.
- Gou, S., Wang, S., & Li, J. (2007). D,L-Proline-catalyzed one-pot synthesis of pyrans and pyrano[2,3-c]pyrazole derivatives by a grinding method under solvent-free condi-tions. *Synth. Commun.* 2007, 37, 2111-2120.
- John, V. D., & Krishanankutty, K. (2006). Antitumour activity er complexes. *Apply. Organoment. Chem.*, 20, 477-486.
- Kalevi, P., Antti, T., & Ryszard, G. (2003). Henryof synthetic curcuminoid analogues (1,7-diaryl-1,6- heptadiene-3,5-diones) and their coppk J. Behaviour of 1,3-diphenyl-2-arylhydrazono-1,3-propanediones under electron ionisation. *Rapid Commun. Mass Spectrom.*, 17,104-106.
- Maurya, R. C., & Rajput, S. (2004). Encapsulation of N,N- ethylenenis(salisylamide) metal complexes in fly ash based zeolite, characterization and catalytic activity. *J.Mol. Struct.*, 687, 35-44.