Regional Academy of Management
European Scientific Foundation Institute of Innovation
Regional Center for European Integration
National Institute of Economic Research
Batumi Navigation Teaching University
Sokhumi State University
Ukrainian Assembly of Doctors of Sciences in Public Administration
East European Institute
International University in Jalal-Abad
Taraz Innovation and Humanities University

# "The Europe and the Turkic World: Science, Engineering and Technology"

## Materials of the IV International Scientific-Practical Conference

May 1-3, 2019
(Istanbul, Turkey)

## Volume II

Istanbul, 2019

**UDC 001.18**
**LBC 72**
**E 91**



**"The Europe and the Turkic World: Science, Engineering and Technology":**
**E 91** Materials of the IV International Scientific-Practical Conference. In two volumes. Volume II – Istanbul, Turkey: Regional Academy of Management, 2019. – 528 p.

**ISBN 978-601-267-399-9**

This is a compilation of the materials of the IV International Scientific-Practical Conference "The Europe and the Turkic World: Science, Engineering and Technology", that was held in Istanbul, Turkey, on May 1-3, 2019.

Submissions cover a wide range of issues, primarily the problem of improving management, sustainable economic development and introduction of innovative technologies, improved training and enhancement of the development of "human capital", interaction between the individual and society, psychological and pedagogical foundations of innovative education.

Materials addressed to all those interested in the actual problems of management, economy and ecology, social sciences and humanities.

UDC 001.18
LBC 72

ISBN 978-601-267-399-9

## SECTION IV / СЕКЦИЯ IV

## NATURAL SCIENCES / ЕСТЕСТВЕННЫЕ НАУКИ 256

# SECTION IV / СЕКЦИЯ IV

# NATURAL SCIENCES / ЕСТЕСТВЕННЫЕ НАУКИ

## 4.1. Synthesis of 3,5-Dimethylenoxytetrahydropyran-4-One and its Oxime

**Elmira M. Yergaliyeva**
PhD student, al-Farabi Kazakh National University (Almaty, Kazakhstan)
**Kulzada B. Bazhykova**
As. professor, docent. Kazakh National University (Almaty, Kazakhstan)
**Peter Langer**
PhD, professor. University of Rostock (Rostock, Germany)

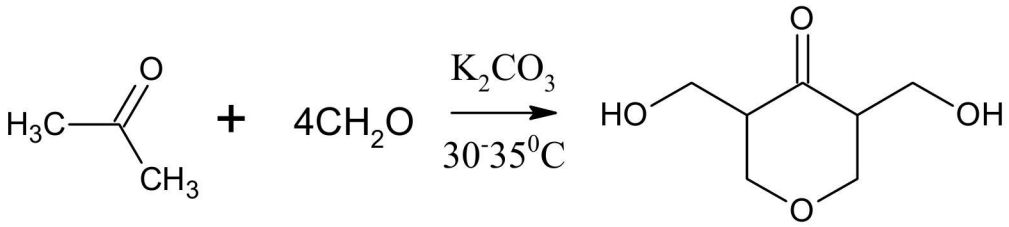
Organic synthesis of various derivatives of heterocycles is especially important today due to the widespread use of these products in medicine. Tetrahydropyranones of varied substitution pattern are embodied as an integral part of numerous biologically active natural products [1-4]. Tetrahydropyranone derivatives are promising starting materials for the synthesis of various heterocyclic compounds with biological activity. Oximes obtained on the basis of heterocyclic compounds, which include 3,5-substituted tetrahydropyran-4-one, possess antibacterial activity [5].

Generally, the tetrahydropyran-4-ones rings can be accessed by a wide variety of methods, including Aldol-type cyclization [6], hetero-Diels-Alderreaction [7], Japp-Maitland reaction [8], oxa-Michael reaction [9] and Petasis-Ferrier rearrangement [10].

We recently reported the synthesis of 3,5-substituted tetrahydropyran-4-one by condensation of acetone and formaldehyde (1:4) in an alkaline medium. The reaction products depend on the ratio of acetone and formaldehyde in the reaction mixture [11].

The experimental procedure of synthesis and structure identification (IR and $^{1}H$ and $^{13}C$ NMR) of 3.5-dimethylenoxytetrahydropyran-4-one is described in the article [12].

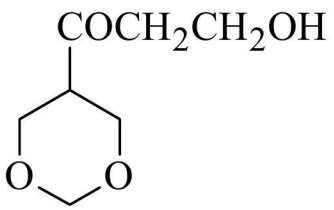
The optimal conditions and reaction scheme are given below. The reaction is carried out for 7 days with constant stirring.



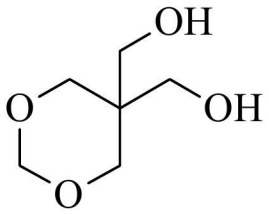

Yield of product is 67.4% as light-yellow crystals. $T_m$=138-140 °C, $R_f$=0.24 (silica gel TLC with butanol/acetic acid/water system 40:12.5:29).

Morgan suggested 2 products of condensation of one mole of acetone and four moles of formaldehyde: 3,5-dimethylenoxytetrahydropyran-4-one and 5-(β-oxipropionyl)-1,3-dioxane (I).

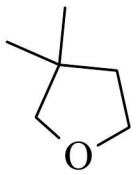
Other possible condensation products are listed below.




I



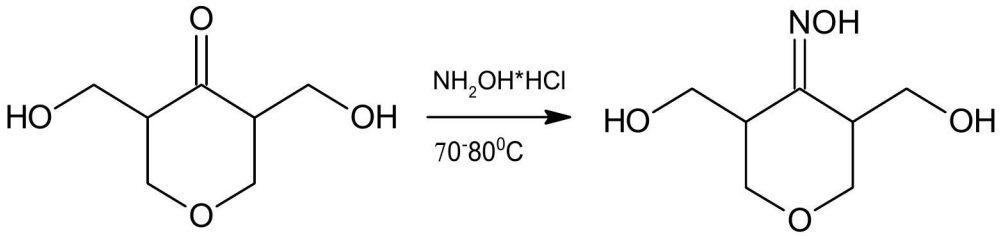

II




III

3,3-dimethyltetrahydrofuran (III) is a byproduct detected by gas chromatography.

The most common laboratory method for the synthesis of oximes is the reaction of aldehydes and ketones with hydroxylamine [13]. The experimental procedure of synthesis is described in the article [14]. Synthesis conditions are presented in the scheme below.




Yield of reaction of 3,5-dimethylenoxytetrahydropyran-4-one with hydroxylamine hydrochloride is 60%, yellow crystals, $T_m$=128 $^0$C, $R_f$=0.54 (silica gel TLC with butanol/acetic acid/water system 40:12.5:29).

Isolation of reaction by-products and identification of their structure using NMR spectra will allow a more thorough study of the 3,5-dimethylenoxytetrahydropyran-4-one and its oxime synthesis. Therefore, the work requires further continuation.

## Literature:

1. Lemos L.M.S., Martins T.B., Tanajura G.H. et al. Evaluation of antiulcer activity of chromanone fraction from Calophyllum brasiliesnse Camb // Journal of Ethnopharmacology. – 2012. - Vol. 141(1). – P. 432–439.

2. Kandhare A.D., Raygude K.S., Ghosh P. et al. Neuroprotective effect of naringin by modulation of endogenous biomarkers in streptozotocin induced painful diabetic neuropathy // Fitoterapia. – 2012. – Vol. 83(4). – P. 650-659.

3. Uesugi S., Watanabe T., Imaizumi T., Ota Y., Yoshida K., Ebisuш H., et al (2015). Total Synthesis and Biological Evaluation of Irciniastatin A

(a.k.a. Psymberin) and Irciniastatin B // The Journal of Organic Chemistry, 80(24), 12333–12350.

4. Nasir N. M., Ermanis K., Clarke P. A. Strategies for the construction of tetrahydropyran rings in the synthesis of natural products // Organic & Biomolecular Chemistry. – 2014. – Vol. 12(21). – P. 3323–3335.

5. Gopalakrishnan M., Thanusu J., Kanagarajan V. A facile solid-state synthesis andin vitroantimicrobial activities of some 2,6-diarylpiperidin/tetrahydrothiopyran and tetrahydropyran-4-one oximes // Journal of Enzyme Inhibition and Medicinal Chemistry. – 2009. – Vol. 24(3). – P. 669–675.

6. Das S., Liand L.S., Sinha C. Stereoselective aldol-type cyclization reaction mediated by dibutylboron triflate/diisopropylethylamine // Organic Letters. - 2004. – Vol. 6. – P. 123.

7. Anada M., Washio T., Shimada N., Kitagaki S., Nakajima M., Shiro M., Hashimoto S. A new dirhodium (II) carboxamidate complex as a chiral Lewis acid catalyst for enantioselective hetero-Diels–Alder reactions // Angewandte Chemie International Edition. – 2004. – Vol. 43(20). – P. 2665–2668.

8. Clarke P.A., Nasir N.M., Sellars P.B., Peter A.M., Lawson C.A., Burroughs J.L. Synthesis of 2,6-trans- and 3,3,6-trisubstituted tetrahydropyran-4-ones from Maitland–Japp derived 2H-dihydropyran-4-ones: a total synthesis of diospongin B // Organic & Biomolecular Chemistry. – 2016. – Vol. 14(28). – P. 6840–6852.

9. Yao H., Ren J., Tong R. A short and flexible route to tetrahydropyran-4-ones via conjugated nitrile oxidescycloaddition and oxa-Michael cyclization: a concise diastereoselective total synthesis of (±)-diospongin A // Chemical Communications. – 2013. – Vol. 49(2). – P. 193–195.

10. Smith A.B., Minbiole K.P., Verhoest P.R., Schelhaas M. Total synthesis of (+)-phorboxazole a Exploiting the Petasis-Ferrier rearrangement // Journal of the American Chemical Society. – 2001. – Vol. 123. – P. 10942-10953.

11. Morgan G.T., Holmes E.L. Formaldehyde condensations with aliphatic ketones. Part I // Journal of the Chemical Society (Resumed). – 1932. – Vol. 1. – P. 2612-2620.

12. Bazhykova K.B., Langer P., Yergaliyeva E.M. et al. Synthesis and identification of 3,5-bis (hydroxymethyl) tetrahydro-4H-pyran-4-one // Chemical Bulletin of Kazakh National University. – 2018. – Vol. 4(91). – P. 4-9.

13. Kim B.R., Sung G.H. Kim J-J., Yoon Y-J. A development of rapid, practical and selective process for preparation of Z-oximes // Journal of the Korean Chemical Society. – 2013. – Vol. 57(2). – P. 295-299.

14. Bazhykova K.B., Yergaliyeva E.M., Abduali G.A., Mukhan D.N., Abik N.A., Otynshiyev E.B. Synthesis of new heterocyclic compounds from

a number of substituted tetrahydropyranones // New Materials, Compounds and Applications. – 2019. – Vol. 3(1). – P. 47-51.

## 4.2. Meat Productivity of Young Sheep Kazakh Fine-Fleeced Breeds

**Rizabek Kadyken**
Candidate of agricultural sciences, Associate Professor of the Department of «Technology of Animal Husbandry Production», «Kazakh National Agrarian University» (Almaty province, Kazakhstan)
**Esenbay Islamov**
Doctor of agricultural sciences, Professor of the Department of «Technology of Animal Husbandry Production», «Kazakh National Agrarian University» (Almaty province, Kazakhstan)
**Beybut Kulataev**
Candidate of agricultural sciences, Professor of the Department of «Technology of Animal Husbandry Production», «Kazakh National Agrarian University» (Almaty province, Kazakhstan)
**Arailym Mukhan**
Master of the specialty "Production technology of livestock products", Professor of the Department of «Technology of Animal Husbandry Production», «Kazakh National Agrarian University» (Almaty province, Kazakhstan)

***Summary***
*Intensive rearing Kazakh fine-fleeced sheep breeds for meat greatest effect gives the growing of rams and the usefulness of the diet, improving the quality of their products and reducing the cost of feed per unit of production and to increase the production of high quality lamb and mutton is necessary to efficiently use the genetic potential of Kazakh fine-fleeced breeds and actualize for the meat the youngsters aged 4-8 months.*
***Key words:*** *young sheep, lamb, mutton, gains rams, scoured wool shearing, feed consumption and feeding.*

### Introduction

Sheep farming has traditionally occupied a key position in animal husbandry of Kazakhstan, which has undergone significant changes for the last 10-15 years. (Sabdenov K.S., Kulataev B.T. Electronic textbook ARM "Valuation of the agriculture's animals" Journal: Volume 4, number 1. Almaty 2007), [1] the main regionalized sheep breeds in the country were mainly focused on the production of wool which is basically based the industry.

Kulataev B.T., Productive and reproductive qualities of the Kazakh fine-fleeced sheep breed the international material scientific-practical conference on problems of animal health and dedicated to the 100th anniversary of Professor M.A. Ermekova 2006, [2] is currently prevailing market price of 1 kg of wool and mutton expressed by the ratio 1: 5 wool was unclaimed and discounted products on the market, because the cost does