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THEORETICAL FOUNDATIONS OF
MODERN SCIENCE AND
PRACTICE

06
APRIL
07 **XI** SCIENTIFIC AND
PRACTICAL
CONFERENCE
MELBOURNE, AUSTRALIA



ISBN 978-1-64871-910-3

THEORETICAL FOUNDATIONS OF MODERN SCIENCE AND PRACTICE

Abstracts of XI International Scientific and Practical Conference

Melbourne, Australia

06-07 April 2020

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Library of Congress Cataloging-in-Publication Data

UDC 01.1

The XI th International scientific and practical conference « THEORETICAL FOUNDATIONS OF MODERN SCIENCE AND PRACTICE» (06-07 April 2020) Melbourne, Australia.2020. 518 p.

ISBN 978-1-64871-910-3

Published on  **Bookwire**[™]
by Bowker
<https://www.bookwire.com/>

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The recommended citation for *this publication is:*

Ayziatulova D., Ayziatulova E. Shelestova., Controlled ovulation stimulation during art cycles among women with a high risk of the ovarian hyperstimulation syndrome with the help of gonadotropin releasing hormone antagonists and considering progesterone level// Theoretical foundations of modern science and practice. Abstracts of XI International Scientific and Practical Conference. Melbourne, Australia 2020. Pp.15-18.

URL: <http://isg-konf.com> .

TABLE OF CONTENTS

1.	Ayziatulova D., Ayziatulova E. Shelestova L. CONTROLLED OVULATION STIMULATION DURING ART CYCLES AMONG WOMEN WITH A HIGH RISK OF THE OVARIAN HYPERSTIMULATION SYNDROME WITH THE HELP OF GONADOTROPIN RELEASING HORMONE ANTAGONISTS AND CONSIDERING PROGESTERONE LEVEL	15
2.	Bondar S., Chabanova O., Trubnikova A. INVESTIGATION OF THE PROCESS OF OZONATION OF MUNICIPAL URBAN SEWAGE THAT HAS UNDERGONE BIOLOGICAL TREATMENT	19
3.	Brukhanskyi R. DIRECTIONS OF ACCOUNTING SUBJECT EXTENSION AS A PART OF DATAWARE OF STRATEGIC MANAGEMENT OF THE ENTERPRISE	22
4.	Chugunov I., Aristov Y. BUDGET POLICY AS A COMPONENT OF THE SYSTEM OF STATE REGULATION OF THE ECONOMY	24
5.	Danilevska N. CLINICAL FEATURES OF THE "DELAYED POST-COMBAT RESPONSE SYNDROME", A NEW DISORDER FROM THE GROUP OF COMBAT STRESS	28
6.	Demchuk A., Taran O. STRUCTURAL, SEMANTIC AND FUNCTIONAL CHARACTERISTICS OF ENGLISH ABBREVIATIONS AND ACRONYMS IN BLOGS	30
7.	Diordiieva I. BREEDING RESULTS ON PRODUCTIVITY AND GRAIN QUALITY OF WINTER WHEAT	34
8.	Длугопольський О., Длугопольська Т. ПОКАРАННЯ ЗА БІДНІСТЬ ТА ПАНДЕМІЯ 2020: ЗАГРОЗИ ДЛЯ КРАЇН, ЩО РОЗВИВАЮТЬСЯ	38
9.	Doronina O, EDUCATION OF THE ELDERLY IN AUSTRALIA: UNIVERSITY OF THE THIRD AGE	40
10.	Напон Н. THE NEGATIVE CONSEQUENCES OF FEMALE NOMADIC SUBJECTIVITY: LOSS OF HAPPINESS AND MALADAPTATION	42
11.	Гондюл О. ВПЛИВ НЕПІВНОСТІ У ДОХОДАХ НА СВІТОВУ ЕКОНОМІКУ	46

INVESTIGATION OF THE PROCESS OF OZONATION OF MUNICIPAL URBAN SEWAGE THAT HAS UNDERGONE BIOLOGICAL TREATMENT

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Urban sewage often comes after treatment with low water exchange capacity. In cities where the industry is a developed, biological treatment in urban wastewater treatment plants is in many cases insufficient in order to effectively remove residual contaminants. The concentration of these substances at the point of discharge of wastewater often exceeds the limit values for reservoirs of economic, drinking and cultural purposes. This is why the deep purification of biologically treated wastewater is a vital process for the environment. This fact started to be particular importance when among the pollutants are identified heavy oxidizing synthetic surfactants (OSSs), petroleum products, dyes, carcinogens, etc Of particular importance are blastomogenic or carcinogenic compounds, among which polycyclic aromatic hydrocarbons are particularly prominent because of their widespread distribution. Medium is the most dangerous gasoline. The essential sources of pollution of the reservoirs of benzpyrene are municipal wastewater, atmospheric air, production processes accompanied by the spillage of petroleum products and the like. In addition, the wastewater contains pathogenic microflora [1-6].

Traditional methods of wastewater treatment, such as biological and chlorination, do not guarantee compliance with environmental standards of the state of natural water resources. In Ukraine, chlorination is most often used on urban wastewater treatment plants. This process is quite simple to implement, but is associated with the formation of organochlorine compounds that are harmful to the human body. Significant inconveniences of chlorine use are related to adherence to special safety rules at all stages of the process [7-10].

Ozonation is versatile and has a powerful effect on many pollutants.

The purpose of the work is to clarify the parameters and establish the feasibility of ozonation of urban wastewater that has undergone biological treatment for deep purification and disinfection.

The paper considers the problem of post-treatment of municipal wastewater in Odessa using ozone. The authors hypothesize the significant advantage of ozonation for the disposal and disinfection of wastewater compared to other methods, for example, chlorination. An important place is occupied by the search for optimal ozone treatment

parameters. Optimal ozonation parameters were found to ensure compliance with the environmental standards of natural reservoirs at runoff. The dose of ozone and the duration of the process are established, which give a good ozonation effect. It is shown that the greatest effect is achieved in the neutralization of synthetic surfactants (up to 95%) and in terms of BOD5 (65%). The effect of ozone on E. Coli behavior is analyzed.

It was found that a significant effect of disinfection by E. coli during ozonation is achieved by treating wastewater for 4 min at a dose of 3 mg / l of ozone. In a mixture of wastewater and natural water, this effect is achieved in 24 hours. The author's hypothesis of the gentle action of ozonation products for the widespread aquatic culture of *Chlorella pyrenoidosa* is confirmed. A significant effect of destruction under the influence of ozone of carcinogens was observed. It was found that up to 82% of benzpyrene in wastewater is destroyed within 16 minutes at a dose of 15 mg / l. The authors conclude that ozonation is a universal method for the purification of biologically treated municipal wastewater, which has a significant effect on the destruction of many toxicants and pathogenic microflora, without the presence of ozonation products that inhibit the development of natural aquatic cultures.

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