



SCIENTIFIC AND TECHNICAL JOURNAL
Namangan Institute of Engineering and Technology

«RESEARCH IN BEVERAGE TECHNOLOGY INTENDED TO
SUPPORT THE FUNCTIONS OF THE CARDIOVASCULAR
SYSTEM»

Nishonov Utkirali

Assistant

Namangan Institute of Engineering and Technology

<https://doi.org/10.5281/zenodo.7950851>



ISSN 2181-8622

Manufacturing technology problems



**Scientific and Technical Journal
Namangan Institute of
Engineering and Technology**

**Volume 8
Issue 1
2023**



4. Ashhurst F.R., Hargitt P. translated from English, Practical recommendations for manufacturers of soft drinks and juices, – St. Petersburg: Profession, 2010. – 215 p.
5. SanPiN 2.3.2.1078-01 /Hygienic requirements for the safety and nutritional value of food products.
6. Nikitina E.V. Microbiology, Giord, – SPB, 2009, – 360c.
7. Omarov M. M. A new dietary product from root vegetables and lemon /Food industry. – 2015. – No. 2.
8. Production of environmentally friendly baby food products //Tez. dokl. nauch.-prakt.konf. – M.: 1994
9. Safety of food raw materials and food products: Textbook / I. A. Rogov, N. I. Dunchenko, V. M. Poznyakov, A.V. Berdutina, S. V. Kuptsova. — Novosibirsk: Sib. univ. publishing house, 2004. ~ 227 p.
10. Donchenko L.V. Safety of food raw materials and food products /L.V. Donchenko, V.D. Nadytka / -M.: Food industry. -1999. - 352s.
11. Adxam X., Abdusattar C. RESEARCH OF DRIED DATES PRODUCTION TECHNOLOGY //American Journal of Interdisciplinary Research and Development. – 2022. – T. 6. – C. 88-91.
12. Jumaeva, D., Toirov, O., Okhunjanov, Z., Raximov, U., & Akhrorova, R. (2023). Investigation of the adsorption of nonpolar adsorbate molecules on the illite surface. Journal of Chemical Technology and Metallurgy, 58(2), 353-359.
13. Raximov U. Yu., Jumaeva D.J. Investigation of physico-chemical properties of thermally activated adsorbents on the basis of local waste //НаМИТИ Научный-технический журнал. – 2021. – №. 2. – С. 92-97.
14. Juraevna, D. J., Yunusjonovich, U. R., & Karimovich, O. E. (2022). Studying on the activated absorbents derived from waste of a grape seed. Journal of Chemical Technology and Metallurgy, 57(5), 998-1005.
15. Raximov U. Yu., Jumaeva D. J., Aymurzaeva L. G. Investigation of the physicochemical properties of steam-activated adsorbents// Uzbek chemical journal, 2021. №5. С. 44-50.

UDC 664.8

RESEARCH IN BEVERAGE TECHNOLOGY INTENDED TO SUPPORT THE FUNCTIONS OF THE CARDIOVASCULAR SYSTEM

NISHONOV UTKIRALI

Assistant of Namangan Institute of Engineering and Technology
E-mail: nishonov84@inbox.ru, Phone: (+99893)4030612

Abstract:

Objective. Currently, research on the creation of technology for food products enriched with biologically active additives of plant origin continues to be relevant. In this regard, of interest are plants containing polyphenolic compounds, which indirectly through enzyme systems regulate redox processes that determine the state of the cell membrane. From this point of view, prostrate marigolds (*Tagetes patula* L.) are a raw material source with a rich and diverse composition of polyphenols. Infusions and decoctions of marigolds are widely used in folk medicine as antimicrobial, hypotensive, hepatoprotective and diuretic agents.

It is also timely and important to develop a technology for obtaining preventive drinks with the addition of biologically active additives of plants of the genus *Tagetes* (Asteraceae) and some other families characteristic of plants.

Methods. The relevance of this work lies in the study of the chemical composition of inflorescences, as well as the study of enriched drinks.

Inflorescences of prostrate marigolds (*Tagetes patula* L.) are a valuable source of biologically active substances (BAS), mainly flavonoids, which is confirmed by studies devoted to the study of both the chemical composition and the pharmacological activity of various fractions and isolated individual substances. Of interest is also the complex use of inflorescence meal as an additional source of biologically active compounds.

Results. Given the above, we considered it appropriate to conduct a comprehensive study of the inflorescences of prostrate marigolds (*Tagetes patula* L.), as well as to develop a technology for obtaining prophylactic drinks based on it, which in fact is the goal of our research.

In connection with this goal, we considered it expedient to solve a number of problems. To solve the tasks set, it is supposed to use modern chemical and physico-chemical methods of research.

Conclusion. The scientific novelty of the study lies in the fact that an in-depth study of the chemical composition of the extract obtained by extraction with ethyl alcohol 40% was carried out. The choice of extractant for this object is substantiated. For the first time, a technology has been developed for obtaining prophylactic drinks with the addition of biologically active additives of prostrate marigold inflorescences (*Tagetes patula* L.).

Keywords: drinks, cardiovascular system function, flavonoids, cardioprotective and hepatoprotective actions, marigolds.

Introduction. A review of the works of domestic and foreign literature on the chemical composition and pharmacologically active components of the inflorescences of prostrate marigolds (*Tagetes patula* L.). The chemical composition of the most common plant species of the genus *Tagetes* is represented by a rich set of biologically active substances belonging to various classes of organic compounds.

Methods. To determine the biologically active substances in the composition of this plant, the method of highperformance chromatography was used. Ethyl alcohol was chosen as the solvent.

There is information about the structure and pharmacological activity of some flavonoids specific to plants of the genus *Tagetes*. For example, antioxidant, anti-inflammatory, and antitumor activities have been proven for quercetagenin and patulithrin [1, 2].

The essential oil obtained during the processing of *Tagetes minuta* L. marigold flowers is used in the perfumery and cosmetics industry. For the prevention of viral infections and acute respiratory diseases, a homeopathic oil-based preparation "Tageton" is used [3].

Carotenoids from the flowers of *Tagetes erecta* L. - lutein and zeaxanthin are used as biologically active additives [4].

In the roots of three marigold species (*Tagetes patula* L., *Tagetes erecta* L., *Tagetes tenuifolia* Cctv.), thiophene derivatives with fungicidal properties were found. Some works provide data on their accumulation in the flowers of prostrate marigolds. It is possible that the presence of this class of compounds is responsible for the antimicrobial activity of flowers [5].

Studies were carried out on the flavonoid composition of the seeds of *Tagetes patula* L. (*short and tall forms*), and patuletin and patulithrin were isolated by preparative column chromatography. Quercetagenin and quercetagenin were isolated from the seeds of *Tagetes erecta* L.

A method has been developed for the simultaneous production of patuletin and patulithrin from plant materials.

Isoquercitrin, quercimerythrin, isorhamnetin and its glycoside, as well as derivatives of quinic acid, have been isolated from different parts of marigold prostrate inflorescences.

The chemical composition, biological and pharmacological activity of flowers of prostrate marigolds *Tagetes patula* L. variety "Orange" were studied at the Department of Organic Chemistry of Pyat GFA. It was proved that the main flavonoids in marigold flowers are patuletin and patulithrin, and their preparative isolation was carried out. The content of

flavonoids in raw materials in terms of patuletin is 9.43% [6].

The presence of rutin, quercetin, dihydroquercetin, robinin, luteolin-7-glucoside, vicenin, vitexin, hyperoside and apigenin has also been proven; studied vitamin, amino acid composition, polysaccharide complex, as well as the content of macro- and microelements of various fractions [6].

The hepatoprotective activity of sums of flavonoids containing mainly flavonol patuletin has been experimentally proven. According to the totality of the identified biochemical parameters, the histological and morphological picture of the liver, this amount is several times higher than the action of Karsil in an equivalent dose [7, 8].

It has been shown that the use of flavonoids from the flowers of marigold prostrate for therapeutic and prophylactic purposes contributes to a more effective preservation and restoration of the pro/antioxidant balance, an increase in the efficiency of detoxification, and also enhances antioxidant protection. A more pronounced stimulating effect on the processes of bile formation and bile secretion was established than with a similar use of Karsil [9].

The antimicrobial activity of substances from marigold flowers was studied and it was found that the extract obtained with ethyl alcohol 70% has a bactericidal and bacteriostatic effect against certain types of bacteria.

It has also been established that extracts from the flowers of marigold procumbent exhibit a gastroprotective effect in conditions of experimental gastropathy in rats [10, 11].

Theoretically substantiated and experimentally developed the technology of extraction of marigold prostrate flowers, which allows extracting lipophilic substances characterized by a wide range of biological activity. Ethyl alcohol 70% was used as an extractant. Based on these studies, a technology was developed for obtaining capsules containing a dry extract

of marigold flowers and quercetin with an optimal dosage of both components, and methods for their standardization were proposed. An experiment on laboratory animals showed that the resulting capsules completely prevent the activation of lipid peroxidation in the liver when it is damaged by carbon tetrachloride.

Granules containing dry and oily extracts from marigold flowers were obtained by wet granulation.

Marigold prostrate is known for its phytochemical and medicinal properties. Infusions and decoctions of flowers are used in folk medicine and homeopathy in the treatment of diseases of the upper respiratory tract, as an antimicrobial, antiseptic, hypotensive, diaphoretic and diuretic. In addition, marigold flowers are eaten, added to refreshing drinks in Latin America and Georgia. Patuletin is part of dietary supplements, for example, "Hepatoleptin", is used as a means of improving the functional state of the liver and biliary tract. Used for prevention and in the complex therapy of cholecystitis, cholecystocholangitis, cholangitis and cholangiohepatitis [12].

Antioxidant activity of flavonoids

Flavonoids are among the widely distributed natural polyphenols. increased interest in which can be explained by their exceptionally unique properties. They have a wide range of pharmacological activity, including: antioxidant, antiviral, hypoglycemic, immunomodulatory activity. From the point of view of the practical use of flavonoids, their antioxidant properties are of the greatest interest.

In addition, many representatives of this class are able to act as agents that prevent or inhibit the formation of tumors, strengthen blood vessels, protect the liver and gastrointestinal tract, stimulate the brain and heart.

Flavonols - kaempferol, luteolin, quercetin, myricetin, containing from two to six phenolic OH groups, are 2-4 times superior to Trolox in their ability to inhibit peroxide radicals.

It is known that quercetin and luteolin at the same high level contribute to the neutralization of hydrogen peroxide, inhibit the generation of superoxide anion radical, which plays a key role in the formation of other reactive oxygen species, and inhibit membrane lipid peroxidation.

Numerous experimental studies have made it possible to determine the most important structural fragments of flavonoids for antioxidant activity: firstly, the presence of ortho-dihydroxy groups in the C3' and C4' positions, which is the most preferable target for radical attack. Secondly, it is a system that includes a vinylene group in the C2-C3 position and a carbonyl in the C4 position, which, together with the "B" aromatic nucleus, essentially constitute the main conjugation chain in flavones, flavonols and chalcones. It is the main conjugation chain that is responsible for the transfer of electronic effects from the "B" ring to the chromon nucleus. Thirdly, the presence of hydroxy groups at positions C3 and C5, together with a carbonyl group at position C4, ensure efficient binding of iron ions (Fe^{3+}) and inhibition of the radicals formed in the reactions of hydroperoxide decomposition.

Due to the balanced work of the enzymatic and non-enzymatic link of the antioxidant system in a healthy body, the intensity of lipid peroxidation and the level of free-radical and peroxide oxygen forms are maintained.

Thus, flavonols, due to the above three structural groups important for antioxidant activity, as a rule, exhibit the highest antioxidant activity in *in vitro* studies.

Endothelioprotectors

It is known that endothelial dysfunction is one of the main causes of development of almost all cardiovascular diseases. This is a universal pathophysiological process, which is associated to some extent with a number of diseases, including socially significant ones, such as atherosclerosis, arterial

hypertension, diabetes mellitus, and cerebrovascular accident [13].

When the endothelial mechanism of regulation of cerebral hemodynamics is disrupted, the balance in the systems "vasodilators - vasoconstrictors" and "antiaggregants - proaggregants" is shifted, as a result, there is a shift in vascular tone towards vasoconstriction and an increase in blood thrombogenic potential, which can aggravate the course of ischemic stroke. The normal state of the endothelium of the cerebral vessels, on the contrary, ensures an equilibrium state in the listed systems (vasodilating and antithrombotic functions of the endothelium), thereby ensuring an adequate blood supply to the brain.

One of the many applications of polyphenolic compounds is the correction of endothelial dysfunction. It is known that the initiation of free radical processes with overproduction of toxic peroxynitrite lies in the etiopathogenesis of vascular endothelial dysfunction.

Pathogenetic factors lead to an imbalance between pro- and antioxidants in the body, which leads to an increase in the number of free radicals and, as a result, to an excessive accumulation of toxic products. For example, the development of vascular complications in diabetes mellitus can be prevented or slowed down with the help of antioxidant therapy [14, 15, 16, 17].

The cause of vascular complications in diabetes mellitus is developing endothelial dysfunction, in which there are disturbances in the system of synthesis and availability of nitric oxide (II) [18].

Results. It is known that flavonoids - quercetin, hesperidin, flavicin - can indirectly influence the production of endogenous nitric oxide (II), improve the vasodilating and antithrombotic function of the endothelium, blood rheology and microcirculation, have a stimulating effect on angiogenesis and collagen formation in the wound, as a result of which healing will be accelerated. wounds. Their positive effect on carbohydrate and lipid

metabolism in animals with experimental diabetes mellitus was studied [18, 19, 20].

In addition to their direct cytotoxic properties, free radicals can attract various inflammatory mediators, contributing to the prolongation of the inflammatory response and tissue damage. Flavonoids, in this case, inhibit lipoxygenase, which reduces the duration of inflammation in wound areas.

Flavonoids have a complex pharmacological activity, the ability to influence various links in the development of endothelial dysfunction: the system of synthesis, excretion and bioavailability of NO, hemorheological parameters of blood, lipid and carbohydrate metabolism, inflammation, and proliferation.

The use of flavonoids as antioxidant and endothelioprotective agents is promising in the treatment of wounds, since they are able to stabilize the production of endogenous nitric oxide by the constitutive form of synthase and additionally prevent the increased formation of free radicals [13].

Discussions. The advantages of biologically active substances of plant origin are obvious for many reasons, so the search for endothelial protectors among them is a promising direction in the field of pharmacy and medicine. Given the above, prostrate marigolds are a promising source of flavonoids containing highly active flavone derivatives - patuletin and patulithrin.

Marigold flavonoids inhibit inflammation, expression of inducible nitric oxide synthase (iNOS), prostanoids and

leukotrienes, as well as other mediators of the inflammatory process (some cytokines and chemokines).

Recent studies have shown the immunomodulatory effect of patuletin, in particular in relation to TNF- α (tumor necrosis factor). In addition, anti-arthritic activity was revealed due to the effect on the production of anti-inflammatory cytokines [21].

Thus, the existing information on the chemical composition of the inflorescences of marigold procumbent allows them to be used as a raw material for the production of biologically active substances with endothelioprotective activity.

Conclusions. From a review of the literature, inflorescences of prostrate marigolds are a valuable source of biologically active substances, mainly flavonoids. This is confirmed by the results of many works devoted to the study of both the chemical composition and the pharmacological activity of various fractions and isolated individual substances. It can be taken into account that the composition of various fractions from marigold flowers contains polyphenols. It has been proven that the purified complex of flavonoids, containing mainly the flavonoid patuletin, exhibits a hepatoprotective effect, which prevents the activation of lipid peroxidation in the liver when it is damaged by carbon tetrachloride. Thus, the enrichment and creation of recipes for preventive drinks using biologically active additives of this plant material has a beneficial effect on the health of the population.

References

1. Рогинский, В.А. Фенольные антиоксиданты. –М.: Медицина, 1988. –247 с.
2. Cai, Q. Dietary flavonoids, quercetin, luteolin and genistein, reduce oxidative DNA damage and lipid peroxidation and quench free radicals / Q. Cai, R.O., K. Zhang // Cancer Lett. –1997. –Vol. 119, No1. –P. 99-107.
3. Растительные ресурсы СССР: Цветковые растения, их химический состав и использование/ под ред. А.Д. Соколова. –Л.: Нева, 1980. –С. 16-20.
4. Новые каротиноидсодержащие фитопрепараты / П.П. Ветров [и др.] // Провизор. –2000. –No16. –С. 19-20.

5. Папаяни, О.И. Изучение антимикробного действия некоторых субстанций из цветков бархатцев распростертых / О.И. Папаяни, И.И. Клишина // Разработка, исследование и маркетинг новой фармацевтической продукции: сб. науч. тр. – Пятигорск, 2010. – Вып. 65. – С. 485-486.
6. Подгорная, Ж.В. Исследование цветков бархатцев распростертых (*TagetespatulaL.*) с целью получения биологически активных веществ: дис. ... канд. фарм. наук: 15.00.02. / Подгорная Жанна Валерьевна – Пятигорск, 2009. – 145 с
7. Василенко, Ю.К. Гепатозащитные свойства препаратов из бархатцев распростертых / Ю.К. Василенко // Хим.-фармац. журн. – 1990. – Т.24, No1. – С.53-56.
8. Терехов, А.Ю. Изучение терапевтического действия флавоноидов *Tagetespatula* при хроническом поражении печени у крыс / А.Ю. Терехов // Разработка, исследование и маркетинг новой фармацевтической продукции: сб. науч. тр. – Пятигорск, 2005. – Вып. 60. – С. 425-428.
9. Влияние патулетина из цветков бархатцев распростертых на состояние эндогенной антиоксидантной системы / Е.Г. Доркина [и др.] // Разработка, исследование и маркетинг новой фармацевтической продукции: сб. науч. тр. – Пятигорск. – 2007. – Вып. 62 – С.464-467.
10. Изучение гастропротекторного действие БАВ из цветков бархатцев распростертых в условиях экспериментальной язвы желудка / Е.Г. Доркина [и др.] // Разработка, исследование и маркетинг новой фармацевтической продукции: сб. науч. тр. – Пятигорск. – 2008. – Вып. 63 – С.414-416.
11. Изучение химического состава и влияния экстракта из цветков бархатцев распростертых на про/антиоксидантное равновесие в желудке крыс при вольтареновой гастропатии [Электронный ресурс] / О.И. Папаяни [и др.] // Современные проблемы науки и образования. – 2012. – No1. – Режим доступа: <https://www.science-education.ru/ru/article/view?id=5618>.
12. Кьосев, П.А. Полный справочник лекарственных растений / П.А. Кьосев. – М.: ЭКСМО – Пресс, 2000. – С.437-438.
13. Эндотелиопротекторы – новый класс фармакологических препаратов / И.Н. Тюренков, А.В. Воронков, А.А. Слиецанс, Е.В. Волотова // Вестн. Рос. акад. мед. наук. – 2012. – No7. – С.50-57.
14. (14) Бондарь, И.А. Антиоксиданты в лечении и профилактике сахарного диабета / И.А. Бондарь, В.В. Климонтов // Сахарный диабет. – 2001. – Т.4, No1. – С. 47-52.
15. (19) Верткин, А.Л. Роль современных сахароснижающих и антиоксидантных препаратов в фармакотерапии сахарного диабета 2-го типа и его осложнений / А.Л. Верткин // Леч. врач. – 2009. – No3. – С. 69-73
16. (68) Мисникова, И.Р. Актуальные вопросы профилактики сахарного диабета 2-го типа / И.Р. Мисникова, А.И. Древаль // Врач. – 2014. – No3. – С.83-84.
17. (98) Слиецанс, А.А. Изучение эндотелиопротекторных свойств флавоноидов при экспериментальном сахарном диабете: автореф. дис... канд. фармац. наук: 14.03.06. / Слиецанс Анна Альбертовна – Пятигорск, 2011. – 24 с.
18. (97) Слиецанс, А.А. Заживление ран и их кровоснабжение у крыс с сахарным диабетом при блокаде индуцибельной и конститутивной NO-синтазы / А.А. Слиецанс, Е.М. Ломкина, И.Н. Тюренков // Вестн. ВолгГМУ. – 2013. – No1 (45). – С.37-49.
19. (141) Potential of flavonoids as anti-inflammatory agents: modulation of pro-inflammatory gene expression and signal transduction pathways / M.J. Tuñón [et al.] // Current Drug Metabolism. – 2009. – Vol. 10, No3. – P. 256-271.

20. (143) Rasik, A.M., Shukla, A. Antioxidant status in delayed healing type of wounds / A.M. Rasik, A. Shukla // Int. J. Exp. Pathol. –2010. –Vol.81. –P. 257-263.
21. (84) Пат. US2015/0025131 A1 Patuletin a potent anti-TNF- α and anti-arthritic compound from *Tagetes patula*[Электронныйресурс] / Muhammed Ahmed Mesaik, Almas Jabeen et al. –USA No13/944,387; заявл. 17.07.2013; опубл. 22.01.2015. –5 с. –Режим доступа: <http://www.freepatentsonline.com/y2015/0025131.html>
22. Saribaeva D.A., Zokirova M.S., Kholdarova G.A. Researching the technology of making beverages of containing fruit juice // Universum: technical sciences: electron. scientific magazine 2022.1(94). URL: <https://7universum.com/ru/tech/archive/item/12981> (date of access: 10/22/2022).
23. Saribaeva D.A., Zokirova M.S. Study of the elemental and amino acid composition of ginger // Universum: technical sciences: electron. scientific magazine 2021. - No. 11(92). - with. 86-91.
24. Saribaeva D.A., Kholdarova G.A. Study of the processes of obtaining functional drinks based on the extract of milk thistles (*Silybum marianum* L.) // Universum: technical sciences: electron. scientific magazine 2022.11(104). URL: <https://7universum.com/ru/tech/archive/item/14641> (date of access: 12/20/2022). Z

UDC 10167

DEVELOPMENT OF NEW TYPES OF VEGETABLE JUICES AND BEVERAGES TECHNOLOGY

VOKKOSOV ZUHRIDDIN

PhD of Namangan Institute of Engineering and Technology
E-mail: zukhriddinvoqqosov@gmail.com, phone: (+99899) 973-94-30

HAKIMOV SARDORBEK

Master's student Namangan Institute of Engineering and Technology

Abstract:

Objective. In this article, vegetables such as cucumbers, carrots, and cabbage are given in different amounts. The effect of enzymes such as Pectomaserin, Pectinex Ultra SP-L, Pectomaserin G10X, Fructozyme M and increased juice output in juice production. The effect of the type of vegetables was determined, it was studied the development of original technologies of cucumber, carrot, cabbage juices and drinks.

Methods. In our republic, vegetable juices are produced in a much smaller volume and assortment than fruit and vegetable juices, and modern methods such as enzymatic processing and targeted lactic acid fermentation are practically not used to obtain them. The prospects of these methods allow not only the use of cost-effective technological modes and the saving of energy resources, reduction of losses and waste, but also the possibility of "soft" modification of the components of raw materials to obtain quality products. Cucumbers, cabbage and carrots were used as the main raw materials for laboratory work for scientific research. The main chemical composition of these raw materials was determined.

Results. Cucumbers, carrots, and cabbage are selected raw materials under the influence of Polygalacturonase, which breaks down pectin and reduces the viscosity of the juice. It increased 10-15 times when using Fructozyme M and Pectomaserin G10X, and only 7 times when using Pectinex Ultra SP-L. At the end of exposures with FP Fructozyme M and Pectomaserin, the viscosity increased 4-6 times, and with Pectinex Ultra SP-L, others showed that the activity of the enzyme in sample 1 was from 8 to 13, and the activity of the second sample was from 11 to 14 it has been.

Conclusion. It was determined that it is expedient to use enzymatic methods to obtain juices and drinks with high nutritional value from cucumbers, carrots and white cabbage, Pectomaserin G10X and Fructozyme M - to obtain purees and juices with stable pulp, Pectinex Ultra SP-L - from finely ground pulp

C O N T E N T S

PRIMARY PROCESSING OF COTTON, TEXTILE AND LIGHT INDUSTRY

A.Shodmonkulov, R.Jamolov, X.Yuldashev	
Analysis of load changes in the chain drive during the drying process of cotton falling from the longitudinal shelves of the drum.....	3
A.Xomidjonov	
Influence and characteristics of drying mechanisms in leather production on the derma layer.....	8
J.Monnopov, J.Kayumov, N.Maksudov	
Analysis of elastic fabrics for compression sportswear in the new assortment	13
S.Matismailov, K.Matmuratova, Sh.Korabayev, A.Yuldashev	
Investigation of the influence of speed modes of the combined drum on the quality indicators of the tape.....	18
A.Shodmonkulov, K.Jumaniyazov, R.Jamolov, X.Yuldashev	
Determination of the geometric and kinematic parameters of the developed chain gear for the 2SB-10 dryer.....	23
R.Jamolov, A.Shodmonkulov, X.Yuldashev	
Determination of dryer drum moisture extraction depending on its operating modes.....	27
A.Djuraev, K.Yuldashev, O.Teshaboyev	
Theoretical studies on screw conveyor for transportation and cleaning of linter and design of constructive parameters of transmissions.....	29
S.Khashimov, Kh.Isakhanov, R.Muradov	
Creation of technology and equipment for improved cleaning of cotton from small impurities.....	36
G.Juraeva, R.Muradov	
The process of technical grades of medium staple cotton at gin factories and its analysis.....	40
I.Xakimjonov	
Literature analysis on the research and development of the method of designing special clothes for workers of metal casting and metal processing enterprises.....	44
GROWING, STORAGE, PROCESSING AND AGRICULTURAL PRODUCTS AND FOOD TECHNOLOGIES	
A.Khodjiev, A.Choriev, U.Raximov	
Improving the technology of production of functional nutrition juices.....	49
U.Nishonov	
Research in beverage technology intended to support the functions of the cardiovascular system.....	53
Z.Vokkosov, S.Hakimov	

Development of new types of vegetable juices and beverages technology...	59
CHEMICAL TECHNOLOGIES	
M.Latipova	
Analysis of the current status of thermoelectric materials and technology for obtaining and manufacturing half-elements.....	66
G.Ochilov, I.Boymatov, N.Ganiyeva	
Physico-chemical properties of activated adsorbents based on logan bentonite.....	72
U.Nigmatov	
Simulation of heat transfer process in absorber channels.....	77
T.Abduxakimov, D.Sherkuziev	
Procurement of local raw materials complex fertilizers with nitrogen-phosphate-potassium containing moisture.....	84
P.Tojiyev, X.Turaev, G.Nuraliyev, A.Djalilov	
Study of the structure and properties of polyvinyl chloride filled with bazalt mineral.....	89
M.Yusupov	
Investigation of phthalocyanine diamidophosphate- copper by thermal analysis.....	95
L.Oripova, P.Xayitov, A.Xudayberdiyev	
Testing new activated coals AU-T and AU-K from local raw materials when filtration of the waste mdea at gazlin gas processing plant.....	101
N.Kurbanov, D.Rozikova	
Based on energy efficient parameters of fruit drying chamber devices for small enterprises.....	107
MECHANICS AND ENGINEERING	
U.Erkaboev, N.Sayidov	
Dependence of the two-dimensional combined density of states on the absorbing photon energy in GaAs/AlGaAs at quantizing magnetic field.....	113
I.Siddikov, A.Denmuxammadiyev, S.A'zamov	
Investigation of electromagnetic current transformer performance characteristics for measuring and controlling the reactive power dissipation of a short-circuited rotor synchronous motor.....	125
Sh.Kudratov	
Evaluation and development of diagnostics of the crankshaft of diesel locomotives.....	130
Z.Khudoykulov, I.Rakhmatullaev	
A new key stream encryption algorithm and its cryptanalysis.....	135
T.Mominov, D.Yuldoshev	
Coordination of the movement of transport types in areas with high passenger flow.....	146
R.Abdullayev, M.Azambayev, S.Baxritdinov	

Analysis of research results according to international standards.....	152
R.Abdullayev, M.Azambayev	
Cotton fiber rating, innovation current developments, prospects for cooperation of farms and clusters.....	157
F.Dustova, S.Babadzhanov.	
Calculation of the load on the friction clutch of the sewing machine.....	163
Z.Vafayeva, J.Matyakubova, M.Mansurova	
Improvement of the design of the shuttle drum in the sewing machine.....	168
A.Obidov, M.Vokhidov	
Preparation of a new structure created for sorting of ginning seeds.....	174
Sh.Mamajanov	
Carrying out theoretical studies of the cotton regenerator.....	181
ADVANCED PEDAGOGICAL TECHNOLOGIES IN EDUCATION	
A.Khojaev	
Methodological issues of organizing internal audits and control of off-budget funds in higher education institutions.....	188
I.Nosirov	
Theoretical foundations of establishing new technologies on personal management system.....	192
Z.Mamakhanova, D.Ormonova	
Specific characteristics of uzbek national art of embroidery.....	198
A.Raximov, M.Khusainov, M.Turgunpulatov, S.Khusainov, A.Gaybullayev	
Energy-saving modes of the heat treatment of concrete.....	202
ECONOMICAL SCIENCES	
M.Bekmirzayev, J.Xolikov	
Prospects for the development of service industries.....	211
A.Ilyosov	
Organizational and economic mechanisms to support the export of industrial products: a comparative analysis of foreign experience and proposals.....	216
I.Foziljonov	
The importance of multiplier indicators in assessing the effectiveness of the cash flow of the enterprise.....	221
K.Kurpayanidi	
Innovative activity of business entities in the conditions of transformation: a retrospective analysis.....	227
Sh.Muxitdinov	
Main characteristics of the risk management mechanism in manufacturing enterprises.....	237
Y.Najmiddinov	
Green economy and green growth. initial efforts of sustainable development in Uzbekistan.....	241

E.Narzullayev	
The methods for measuring the effectiveness of social entrepreneurship activity.....	248
E.Narzullayev	
Analysis of the management and development of environmental social entrepreneurship in Uzbekistan.....	254
F.Bayboboeva	
Legal regulation of entrepreneurial activity.....	259
Z.Boltaeva	
Foundations of neuromarketing strategy in industry.....	265
R.Rashidov	
Issues of regional development of small business.....	270
Sh.Abdumurotov	
Methodology for forecasting the competitiveness of an enterprise based on the elliott wave principle.....	277
S.Goyipnazarov	
Assessment of impact of artificial intelligence on labor market and human capital.....	288
A.Norov	
Evolution of management science.....	296
K.Narzullayev	
Investment process in the republic of Uzbekistan.....	306
Kh.Irismatov	
Statistical analysis of assessment of the volume of the hidden economy in the republic of Uzbekistan.....	311



**“SCIENTIFIC AND TECHNICAL JOURNAL OF
NAMANGAN INSTITUTE OF ENGINEERING AND
TECHNOLOGY”**



**The editorial was typed and paginated in the computer center
Paper format A4. Size 20 conditional printing plate**

**The copy must be taken from the "Scientific and Technical Journal of the
Namangan Institute of Engineering and Technology"**