

Falsified Alcohol: Multidisciplinary Forensic and Pharmaceutical, Criminal and Legal, Clinical and Pharmacological Study of Circulation and Factors of Destruction of Human Body

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Abstract. Falsified alcohol, also known as counterfeit or illicit alcohol, is a pervasive problem worldwide, posing serious threats to public health and safety. This abstract provides an overview of a multidisciplinary study that delves into the various aspects of falsified alcohol, including forensic and pharmaceutical, criminal and legal, clinical and pharmacological perspectives, with a focus on its circulation and the factors that contribute to its detrimental effects on the human body. Forensic and pharmaceutical analyses play a crucial role in the identification and characterization of falsified alcohol. Additionally, pharmaceutical investigations explore the packaging, labeling, and branding of falsified alcohol, uncovering the intricate web of counterfeit alcohol production and distribution networks. The criminal and legal aspects of falsified alcohol encompass a wide range of issues, including the illicit production, sale, and distribution of counterfeit alcohol, as well as the legal ramifications for those involved in its trade. This study examines the various criminal activities associated with falsified alcohol, such as smuggling, counterfeiting, and fraud, and the legal frameworks in place to combat these activities, including international conventions, regulations, and enforcement strategies. The clinical and pharmacological aspects of falsified alcohol delve into the health consequences of consuming counterfeit alcohol. Falsified alcohol can cause severe adverse effects on the human body, ranging

from acute intoxication to long-term health damage, including organ failure, blindness, and even death. This study explores the clinical manifestations of falsified alcohol poisoning, the challenges in diagnosing and treating its victims, and the pharmacological mechanisms underlying its toxic effects. Furthermore, this study researches the circulation of falsified alcohol, including its routes of distribution, the key players involved in its trade, and the socioeconomic factors that contribute to its proliferation. The study also explores the factors that contribute to the destruction of the human body by falsified alcohol, including the chemical composition of counterfeit alcohol, the dose and duration of exposure, and the susceptibility of individuals to its toxic effects based on factors such as age, gender, genetics, and comorbidities. In conclusion, falsified alcohol poses significant threats to public health and safety, requiring a multidisciplinary approach to comprehensively understand its circulation and the factors that contribute to its detrimental effects on the human body. This study provides insights from forensic and pharmaceutical, criminal and legal, clinical and pharmacological perspectives, shedding light on the complexities of falsified alcohol and the need for concerted efforts from various disciplines to combat this pressing public health issue.

Keywords: forensic pharmacy, criminal law, clinical pharmacy, falsified alcohol, risks, consequences.

Introduction. According to the published report of the World Health Organization (WHO), in 2016, more than 3 million people died prematurely because of the harmful use of alcohol [1]:

- one death out of 20 deaths due to alcohol abuse;
- more than three-quarters of these deaths were among men;
- in general, the harmful use of alcohol is responsible for more than 5% of the total burden of disease in all countries of the world.

The question arises as to how a lawyer [2] should act to protect the rights of injured citizens who were sold counterfeit alcohol through the legal sector of Ukraine's economy (cafes, bars,

restaurants, shops, supermarkets). Poisoning occurred because of the consumption of low-quality alcohol. Bodily injuries were caused according to the forensic evaluation criterion, such as light, moderate, severe bodily injuries or those that are causally related to the premature death of the patient [3]. In addition, sick victims, because of poisoning with counterfeit products, go to health care facilities for outpatient or inpatient treatment.

The State of Ukraine (law enforcement agencies, prosecutors, judges, state, and local self-government bodies, etc.) has assumed criminal-legal, medical-pharmaceutical, and socio-economic obligations to protect the rights and freedoms, life and health of citizens and patients, which is stipulated in the Constitution of Ukraine [4]

Art. 3 "A person, his life and health, honor and dignity, inviolability and security are recognized as the highest social value in Ukraine". It is indicated that: human rights and freedoms and their guarantees determine the content and direction of the state's activities. The state is responsible to the people for its activities. Affirmation and provision of human rights and freedoms is the main duty of the state.

Art. 27 "Every person has an inalienable right to life". It is stated that: no one can be arbitrarily deprived of life. The duty of the state is to protect human life. Everyone has the right to protect his life and health, the life and health of other people from illegal encroachments.

Art. 46 "Citizens have the right to social protection, which includes the right to support them in case of total, partial or temporary loss of work capacity, loss of a breadwinner, unemployment due to circumstances beyond their control, as well as in old age and in other cases provided for by law". It is indicated that this right is guaranteed by mandatory state social insurance at the expense of insurance contributions of citizens, enterprises, institutions, and organizations, as well as budgetary and other sources of social security; creation of a network of state, communal, private institutions for the care of the disabled. Pensions, other types of social benefits and assistance are the main source of funding, and must ensure a standard of living not lower than the subsistence minimum established by law.

Art. 49 "Everyone has the right to health care, medical assistance and medical insurance." It is indicated that health care is provided by state funding of relevant socio-economic, medical-sanitary, and health-preventive programs. The state creates conditions for effective and accessible medical care for all citizens. Medical assistance is provided free of charge in state and communal health care institutions; the existing network of such institutions cannot be reduced. The state promotes the development of medical institutions of all forms of ownership. The state takes care of the development of physical culture and sports, ensures sanitary and epidemic well-being.

To protect the rights and freedoms, life and health of citizens and patients, the state has created a system for licensing enterprises [5] that produce alcoholic beverages. The state guarantees every citizen access to high-quality and safe vodka products (cognac, vodka, wine, champagne, beer, etc.). Unfortunately, law enforcement agencies in all regions of Ukraine detect the illegal activities of citizens in the production, supply and distribution of counterfeit and smuggled alcoholic beverages. Every year in Ukraine, numerous cases of poisoning of people with alcohol surrogate are recorded, including facts of deaths of citizens because of intoxication with falsified alcohol [6-9].

Multidisciplinary researches that conduct leading scientists of Ukraine: Linskyi I.V., Minko O.I., Grizodoub O.I., Shapovalova V.O., Shapovalov V., Hayduchok I.G., Ryabukha O.I., Ishcheykin K.E., Bondarenko V.V., Nikonov M.M., Khalin M.M., Petrenko V.O., Galavan Z.S. and others or were conducted by leading scientists of Ukraine: Sosin I.K., Trakhtenberg I.M., Stefanov O.V., Georgievskii V.P., Stashys V.V., Tatsii V.Y., Voloshyn P.V., Tykhonov. O.I., Abrosymov O.S., aimed specifically at the organization of pharmaceutical and medical affairs, the creation of new medicinal products and their use during pharmacotherapy based on evidence-based medicine and evidence-based pharmacy with the use of criminal and legal, medical and pharmaceutical, and socio-economic components in the fields of healthcare and pharmacy [10-36].

The aim of the study. To conduct interdisciplinary forensic and pharmaceutical, criminal and legal, clinical and pharmacological studies on the study of the circulation of adulterated alcohol as a risk factor in the destruction of the body, life and health of a sick person. To justify the need to increase

criminal responsibility for offenders who carry out illegal production and sale of surrogate (falsified alcohol products) through the legal sector of the economy of Ukraine (shops, cafes, restaurants) – places of mass gathering of people.

Materials and methods. The forensic and pharmaceutical basis of the study was made up of interdisciplinary connections with legal, medical and pharmaceutical disciplines, namely: administrative law, constitutional law, criminal law, pharmaceutical law, medical law, criminology, criminology, evidence-based pharmacy, clinical pharmacy, drug technology, industrial pharmacy, pharmacy organization and management, pharmaceutical analysis, health care organization, evidence-based medicine, forensic medicine, forensic narcology, forensic psychiatry, infectious diseases, immunology, internal medicine, economics. Retrospective, comparative, documentary, graphical, legal, systemic, tabular, and forensic pharmaceutical research methods were used.

Scientific research has been carried out for a long time, in the period from 1992 to 2023, since the time the author served in various positions in the penitentiary system, operational services, investigative bodies of the Ministry of Internal Affairs of Ukraine, civil service in the Department of Health of the Kharkiv Regional State Administration, legal and scientific pedagogical work in institutions of higher education of Ukraine, on the main specialty: 15.00.01 – medicine technology, pharmaceutical business organization and forensic pharmacy.

The study is a fragment of research works of Lviv Medical Institute LLC on the topic of "Improving the system of circulation of drugs during pharmacotherapy on the basis of evidentiary and forensic pharmacy, organization, technology, biopharmacy and pharmaceutical law" (state registration number 0120U105348, implementation period 2021-2026).

Results and discussion. One of the main problems of today – the consumption of alcoholic beverages by children, minors and young people is gaining increased scope [37]. Alcohol, as a psychoactive substance, has a particularly active effect on the unformed child's body. It gradually destroys individual organs and systems (cardiovascular, circulatory, vision, psycho-neurological, liver, etc.). During this period, the liver lacks a special enzyme that breaks down ethyl alcohol. Therefore, in adolescence, the destructive effect of alcohol on the liver occurs in a much shorter time than in adults [38-41].

Patients who have a bad habit of drinking more often than others suffer from various cold diseases of the respiratory organs. Alcohol weakens the body's resistance, and frequent alcohol consumption increases the risk of various disorders in the body. In case of infection, it complicates the course of the disease with COVID-19. In Ukraine, more than 70% of citizens who died from complications caused by COVID-19 had comorbid diseases (cardiovascular, diabetes, neoplasms, kidney, and lung diseases, and in some cases – a combination of these diseases) [42-44].

It is COVID-19 and comorbid health disorders that revealed shortcomings in the organization of the health care sector, the work of health care institutions in cases of "excess mortality", the provision of timely, modern, effective, safe, high-quality, and free medical care, medical errors [45-52]. According to experts of the World Health Organization, the majority of "excess deaths" are concentrated in [53]:

- Southeast Asia, Europe, and America (84%);
- middle-income countries account for 81% of the 14.9 million excess deaths (53% in lower-middle-income countries and 28% in upper-middle-income countries) over the 24-month period, with both high- and low-income countries, each of which accounts for 15% and 4%, respectively;
- 10 countries of the world excess deaths were concentrated (68%).

Fatal cases ("excess mortality") indirectly related to COVID-19, including other diseases (HIV/AIDS, drug addiction, alcoholism, type I and II diabetes, psycho-neurological, cardiovascular, oncological, and other disorders). Patients did not have access to medical and pharmaceutical care because health care systems were overwhelmed by the pandemic.

Forensic-pharmaceutical and forensic-medical studies of the data provided on the "Opendatobot" website indicate that in 2020, 2,513 cases of "premature death" of citizens were recorded because of intoxication and overdose of alcoholic beverages, as well as from accidental

poisoning, the cause of which is often falsified alcohol (burnt, surrogate), which is four times less when compared with the indicators 16 years ago, that is, with 2005 [54].

Experts urge citizens not to buy or drink alcohol of unknown origin under any circumstances. Alcohol substitutes are liquids that are not intended for consumption as beverages. These include household chemicals, cosmetics (colognes, perfumes, lotions), car fluids (washed glass, brake fluid), medicinal preparations (motherwort, hawthorn tinctures) and others. A separate category of alcohol surrogates is adulterated alcoholic beverages. Vodka, cognac, wine, tincture, and other alcoholic beverages produced with improper technology can be dangerous to human health and cause severe poisoning [55]. Among the surrogates are those that contain ethyl alcohol and are dangerous only because of impurities and additives; and there are others that contain methyl alcohol and decompose in the body with the release of toxic substances that lead to severe poisoning. Methyl alcohol and antifreeze (ethylene glycol) show the most toxic effect, the lethal dose of which is 60-100 ml. Lower doses cause optic neuritis and blindness (methyl alcohol), acute renal and hepatic failure (ethylene glycol). Metabolism of methyl alcohol and ethylene glycol in the body occurs according to the "lethal synthesis" type. This means that in the process of disintegration of poisons in the liver, products are formed that are much more toxic than the original compounds [56]. The degree of poisoning and its consequences depend on several factors: the properties and amount of poison that entered the body, the method of its entry, the duration of stay in the body (time of contact with the poison), the state of human health [57]. Each human body is individual, therefore, for each citizen there is a so-called dose of alcohol, which becomes poison for him. It depends on weight, hereditary factors, the presence of chronic diseases, the state of the stomach and liver, the conditions of alcohol intake (snacks, other drinks) and many other factors. A person who is in a state of alcohol intoxication is not able to adequately assess his condition and therefore may not notice that he has been poisoned by alcoholic beverages. The most severe alcohol poisoning occurs in women, teenagers, and children. The first signs of such poisoning are nausea, dizziness, incoordination, difficulty speaking. "Flies" appear in front of the eyes, throbbing in the temples, stomach aches and continuous vomiting, calf muscles contract, double vision, body temperature drops, loss of consciousness is possible. In this state, the activity of the cardiovascular and respiratory systems is disturbed. In victims, the pulse becomes more frequent, it becomes thread-like (poorly palpable), breathing becomes noisy. Abundant separation of saliva and mucus, sometimes in the form of foam, can be observed. The consequences of such poisoning are very dangerous, an alcoholic coma and even death can occur. Therefore, the victim needs medical assistance and emergency hospitalization.

We believe that fatal cases that belong to the category of poisoning of citizens with an alcohol surrogate and are not included in official statistics should: be recorded by law enforcement agencies, the prosecutor's office and health care institutions, as criminal offenses and a pre-trial investigation should be conducted on them; conduct forensic medical, forensic chemical, forensic pharmaceutical, forensic and other examinations.

When retrospectively studying the operative report of the Main Department of the State Production and Consumer Service in the regions of Ukraine, as of November 10, 2016, poisonings were recorded almost everywhere [58]:

- in the Izyum district of the Kharkiv region, according to the results of the forensic medical examination, a fatal case of poisoning by alcohol surrogates was registered; the total number of adulterated alcohol poisonings in the Kharkiv region is 100, of which 53 died; according to the forensic medical examination in the Kharkiv region, methyl alcohol was detected in 50 deceased persons;
- in the Donetsk, Luhansk, Zhytomyr, Mykolaiv, Zaporizhzhya and Dnipropetrovsk regions, no new cases of poisoning by alcohol surrogates were registered (46 citizens were poisoned, 16 of them died);
- Mykolaiv region (Mykolaiv city): 6 people were poisoned, 6 died;
- Zhytomyr Region (Berdychiv): 3 people were poisoned, 1 person died of them;
- Dnipropetrovsk region (Katyoschyne village, Tomakiv district): 8 people, 2 died;
- Donetsk region (Lyman): 9 people were poisoned, 5 of them died;

- Luhansk region (Rubizhne): poisoned and died – 2 people;
- Zaporizhzhia region (Vilniansky district): poisoned – 18 people;
- according to the results of the forensic medical examination, methanol was found in the blood of 56 deceased (Kharkiv region – 50, Mykolaiv region – 5, Zhytomyr region – 1);
- in Ukraine, as of 6 p.m. on November 10, 2016, 146 cases of poisoning by falsified dangerous alcohol were registered, of which 69 ended in death.

According to [59], drunkenness in Ukraine remains an acute social and cultural problem with signs of a national epidemic. Specialists of the State Production and Consumer Service noted: about 700,000 people with a diagnosis of chronic alcoholism are officially registered; about 100,000 new alcoholics are registered every year; more than 40,000 Ukrainians die every year due to alcohol, of which 3-4,000 poisoned by alcohol and its surrogates; 8 thousand cardiopathies; the rest are all other diseases and accidents that occur due to excessive alcohol consumption: fires caused by smoking in bed while intoxicated, traffic accidents, accidents, injuries caused by alcohol intoxication, hooligan acts; alcohol kills 40 Ukrainians every day; almost 40% of Ukrainian teenagers aged 14-18 regularly drink alcoholic beverages; alcohol is the cause of premature death of 30% of Ukrainian men; there is 1 woman for every 6 men from this contingent of persons; according to domestic narcologists, the number of citizens diagnosed with chronic alcoholism in Ukraine may be 4-5 times higher and may range from 2,800,000 to 3,500,000 people.

An important point in our research is the consideration of forensic pharmaceutical examples No. 1-4, which testify to the large-scale circulation of counterfeit alcohol products in Ukraine. Members of organized criminal groups, despite the criminal legislation of Ukraine, carry out actions related to the illegal circulation of falsified alcoholic beverages of well-known brands. As a rule, criminals sell counterfeits through the legal sector of Ukraine's economy.

Forensic and pharmaceutical example No. 1. Under the procedural guidance of the Dnipropetrovsk Regional Prosecutor's Office, on April 11, 2023, a formal accusation was sent to the court against six members of an organized group for illegal acquisition, manufacture, storage, transportation, and sale of excise goods under Part 3 of Art. 28, ch.ch. 1, 2 Art. 204 of the Criminal Code of Ukraine [60].

The pre-trial investigation in the criminal proceedings was carried out by the investigators of the investigative department of the National Police in the Dnipropetrovsk region under the operative support of the employees of the Department of Strategic Investigations in the region. According to the investigation data, established that the resident of Dnipro organized an organized criminal group and a scheme for illegal circulation (production, accounting, storage, transportation, sale) of alcoholic beverages and tobacco products, and for the implementation of the "business" he involved his wife and four acquaintances, each of them performed functions according to a pre-agreed plan.

Alcohol was produced in an underground workshop near the place of residence of the organizer. Tobacco products without excise tax stamps were purchased in bulk via the Internet. In the future, all goods were sold through a network of retail trade throughout the territory of the city of Dnipro.

During authorized searches at the place of illegal activity and residence of the accused, the following were seized: equipment to produce alcoholic beverages; packaging materials; 2500 liters of finished products; raw materials – 1400 liters of alcohol; tobacco; cash; mobile phones; draft records. The estimated value of the seized products is almost UAH 1 million.

Forensic and pharmaceutical example No. 2. The prosecutor of the Odesa regional prosecutor's office referred to the court a formal accusation and a criminal case against two residents of the city of Bilhorod-Dnistrovsky district, who were involved in the illegal production and sale of alcoholic beverages under Part 2 of Art. 28 Art. 204 of the Criminal Code of Ukraine [61-63].

During the pre-trial investigation by the investigative detectives of State Bureau of Economic Safety in the Odesa region under the operational support of the State Security Office in the Odesa region, established that two persons organized a full cycle of illegal production and sale of alcohol and alcoholic products. The perpetrators set up the illegal production of alcoholic beverages in a

warehouse where counterfeit alcohol and preservatives of dubious quality were used. In the future, the defendants sold counterfeit alcohol through the warehouse to retail outlets in the region.

During the conducted searches authorized by the court, investigators, and operatives, in the presence of witnesses, discovered and seized from illegal circulation: more than 23 tons of alcohol; 660 liters of surrogate alcohol in bottles and containers disguised as vodka and cognac; 28 thousand packs of tobacco products.

The value of the detected and seized goods is UAH 10.2 million. During the operational search activity, places, and persons from whom the suspects purchased alcohol as a raw material to produce falsified alcoholic beverages were established. Currently, investigative actions are ongoing regarding other members of the group, involved in illegal equipment and identification of injured citizens.

Forensic and pharmaceutical example No. 3. Investigators of the State Criminal Investigation Department in Lviv Oblast, under the procedural guidance of the Lviv Oblast Prosecutor's Office, are conducting criminal proceedings on a fact-by-fact basis for the illegal production of excise goods, which the perpetrators sold through the network of wholesale and retail trade in the region, in accordance with Part 1 of Art. 199 and Part 1 of Art. 204 of the Criminal Code of Ukraine [64].

During the pre-trial investigation, it was established that on March 5, 2021, the operative services discovered two residents who, in the village of Velikiy Bolyukhiv in the Zolochiv region of the Lviv region, had set up and adjusted the operation of a mini workshop for circulation (accounting, storage, sales) – production of adulterated alcohol in two premises counterfeit excise stamps. Established that the estimated output of finished products was 300-400 bottles per day and 20-30 products with a volume of 10 liters in tetra packs with a tap.

During court-sanctioned searches, investigators and operatives seized from the premises: ready-made products of 3,000 liters of alcohol mixture; raw material 220 liters of alcohol; equipment that ensured the illegal production of excise goods. The estimated value of the seized goods is about UAH 1 million.

Forensic and pharmaceutical example No. 4. Investigators of the Zolotonisky Police Department of the State Police in Cherkasy region under the procedural guidance of the Zolotonisky inter-district prosecutor's office of the Cherkasy region are conducting criminal proceedings on the fact of the illegal sale of alcoholic beverages, which led to the poisoning of people in Chornobayivskiy district on the grounds of the commission of a crime provided for in part 3 of Art. 204 of the Criminal Code of Ukraine [65].

During the pre-trial investigation, established that on October 2, 2016, Mr. A., a resident of the village Chornobay with a diagnosis of acute intoxication, poisoning with an unknown alcohol surrogate. During treatment, on October 3, 2016, citizen A. died in the intensive care unit without regaining consciousness.

Investigators and operatives to effectively ensure the legal protection of the rights of people and citizens from criminal encroachments conduct primary investigative (search) actions to establish the objective circumstances of a criminal offense.

The fake vodka that the man used was sold in a local store. Investigations are ongoing. Forensic and medical, criminalistics and other examinations have been ordered for the case.

The given four examples from forensic pharmaceutical practice indicate that counterfeit alcohol was traded in Dnipropetrovsk, Lviv, Odesa and Cherkasy regions. In each criminal case, investigators and operatives detect counterfeit alcohol, alcohol, and equipment from UAH 1 to 10 million. Criminal cases are initiated under Article 204 of the Criminal Code of Ukraine, which, in our opinion, needs editorial changes and additions. To protect the rights of injured citizens, a legislative initiative is needed to strengthen criminal liability for the manufacture of counterfeit alcohol products.

The criminal circulation of surrogate alcohol in Ukraine is too large. Organized crime group, which affect the criminal and legal, socio-economic, medical and pharmaceutical spheres of the state. Large profits from the sale of fakes contribute to the illegal circulation of the legal sector of the Ukrainian economy. Injured citizens and their families need protection from the state, both social and economic assistance, and free medical and pharmaceutical support, which should be enshrined in the laws and regulations of Ukraine. At the same time, in our opinion, deputies of the Verkhovna Rada of

Ukraine should review the criminal legislation and impose criminal responsibility on citizens who commit the murder of people with the use of surrogate alcohol.

Thus, the prevalence and mortality rates from acute ethanol poisoning in Ukraine in recent years, as noted by Zozulya I.S., Kurdyk N.V., Padalka V.N., and Ivashchenko O.V., remain at a consistently high level. An important role is assigned to emergency medical care at the pre-hospital stage to ensure effective measures aimed at timely diagnosis of emergency conditions, prevention of complications, correction of breathing and hemodynamics. Considering evidence-based medicine and evidence-based pharmacy, the use of clinical protocols, algorithmic schemes, and practical recommendations for providing medical and pharmaceutical assistance in the case of "Alcoholic Coma" will help practicing doctors to make the right decisions in a timely manner and ensure the necessary amount of medical and pharmacotherapeutic measures in the organization of the pre-hospital stage [66].

Alcohol addiction causes disorders of the gastrointestinal tract, liver, pancreas, respiratory organs, kidneys, and gonads, and increases the risk of dementia, rectal cancer, and breast cancer [67]. Individuals who consume alcohol excessively have higher risks of cardiovascular disease, hypertension, and abdominal obesity. Alcohol addiction causes persistent mental disorders, causes a decrease in work capacity, rapid fatigue, memory impairment, some carelessness, lying, mood swings, irritability, and a tendency to conflicts. Binge drinking and psychoses occur because of alcohol addiction. Alcohol addiction leads to domestic and industrial injuries, traffic accidents, crimes, violations of the rules of public behavior, and the destruction of families.

Who should not drink alcoholic beverages at all:

- ❖ persons younger than 18 years (illegal age for buying alcohol in Ukraine);
- ❖ for those who are planning to become pregnant, this applies to both men and women, pregnant women, and women during the breastfeeding period;
- ❖ drivers or persons participating in activities that require concentration, coordination, and vigilance;
- ❖ persons who take medicines that interact with alcohol – their combination causes significant side effects; therefore, it is necessary to read and follow the instructions for the medication for persons with certain diseases (psycho-neurological, physical, gastroenterological, cardiovascular, eye diseases, etc.);
- ❖ persons who have gotten rid of alcohol or drug addiction, who are unable to control the amount of alcohol they drink.

There is a concept of a standard dose of alcohol. In different countries, this indicator varies from 8 to 14 grams of pure alcohol in conversion. For Ukraine, this is about 10 grams of alcohol. It was determined that this amount of alcohol contains approximately 40 ml of strong drink (vodka, whiskey, cognac), 150 ml of wine (12%) or 350 ml of beer (5%). The dose is reasonably safe, as general health, age, weight, genetics, medications, and even gender affect sensitivity to alcohol. A woman's body contains less fluid than a man's. Therefore, the concentration of alcohol in women, and therefore the degree of its toxicity, will be higher. In addition, a woman's body produces fewer enzymes that break down alcohol. It takes more time to remove alcohol from the body. Low-risk alcohol consumption for women is three or fewer standard drinks per day and no more than seven drinks per week. That is, if you are a woman who only drinks two standard doses a day, but five days a week, that is ten doses, more than the recommended amount for low-risk consumption. For men, low-risk drinking is defined as drinking four or fewer standard drinks on any day and fewer than 14 drinks per week. If you are a man who only drinks four standard drinks a day, but drinks five days a week, you are consuming 20 drinks a week – more than the recommended low-risk level of consumption [67].

Clinical and pharmacological studies cited by Nedashkivskyi C. [68] indicate that individuals who have consumed methanol may have a sharply expressed individual sensitivity to this alcohol. For example, when studying group poisonings, when all the victims took approximately the same amount of methanol, along with severe and fatal cases, it is almost always necessary to observe persons who did not have any, even subjective, manifestations of poisoning. A toxic dose of methanol

is 7-8 ml. Potentially fatal – 30-100 ml. Due to different individual sensitivities to methanol, fatal poisonings have also occurred when taking 5 ml (in adults). At a dose of 250-500 ml, sometimes only mild poisoning is observed. The largest number of fatal poisonings occurred after taking 100 ml of methyl alcohol or more. A dose of methanol of 30 ml was the smallest that resulted in a fatal outcome. In one case, death occurred after ingestion of 1,200 ml of pure methanol.

Clinical manifestations of methanol poisoning. Poisoning according to its course can be conventionally divided into three stages: narcotic, acidotic, and the stage of damage to the central nervous system (includes vision disorders). The severity of the stages depends on the dose of the poison and the sensitivity of the body. The severity of the stages depends on the dose of the poison and the sensitivity of the body.

Examination of a patient with methanol poisoning:

- General blood test (may reveal anemia).
- General urine analysis (will help to determine the absence or presence of water metabolism disorders, in particular dehydration).
- Determination of blood group and Rh group (necessary for catheterization of central veins to determine central venous pressure (CVT), hemodialysis).
- Determination of the level of glucose in the blood (may reveal hypoglycemia).
- Determination of total protein (will determine the initial nutritional status of the patient).
- Determination of transaminase, bilirubin (levels may be increased).
- Determination of urea, creatinine (baseline status is assessed).
- Determination of blood α -amylase (increased level in concomitant pancreatitis, pancreatic necrosis).
- Determination of plasma osmolality (an increase in the osmolar gap is often registered).
- Determination of plasma electrolytes (an increase in the anion gap is often registered).
- Frequent determination of acid-base status, blood gases.
- If possible – toxicological verification of the poison in the biological environment of the victim.

If necessary, additionally carry out:

- ✓ X-ray of chest organs;
- ✓ electrocardiography;
- ✓ ultrasound;
- ✓ computer tomography.

Table 1. Breakdown of different percentages of "Human Blood Alcohol Content" along with their symptoms into separate outcomes for men and women.

No.	Men Blood alcohol content: 0.033%-0.12%	Women Blood alcohol content: 0.09%-0.25%
1.	<ul style="list-style-type: none"> → Improving mood → Higher self-confidence → Less worry → Redness of the face → Shorter attention span → Lack of fine motor coordination → Impaired judgment 	<ul style="list-style-type: none"> → Sedation → Memory loss and lack of understanding → Slowed motor reactions → Balance problems and ataxia → Blurred vision and impaired sensitivity
No.	Alcohol content in blood: 0.25%-0.40%	Вміст алкоголю в крові: 0,35 % -0,80 %
2.	<ul style="list-style-type: none"> → Consciousness and unconsciousness or complete loss of consciousness 	<ul style="list-style-type: none"> → Comatose → Lack of reaction of the pupil to light → Life-threatening respiratory depression

	<ul style="list-style-type: none"> → Amnesia during events while intoxicated → Staggering gait → Vomiting with aspiration → Respiratory depression → Urinary incontinence → Slow pulse 	<ul style="list-style-type: none"> → A sharp decrease in heart rate → Death
3.	<i>For men:</i> <ul style="list-style-type: none"> → Impotence → Reduction of testicles → Sperm damage → Decreased sperm count 	<i>For women:</i> <ul style="list-style-type: none"> → Increase in gynecological problems → Damage to the fetus during pregnancy → Increased risk of breast cancer

Blood alcohol content. Alcohol consumption affects different individuals differently depending on their weight, gender, and metabolism. Several risk factors may influence, such as the amount consumed, the person's medical history, tolerance to alcohol, as well as to other psychoactive substances in combination with alcohol [68]. Blood alcohol content (BAC) determines the effect of alcohol on the central nervous system. Those who have developed a tolerance to alcohol may drink more than those with a lower tolerance level. Depending on BAC, you may experience a few side effects that range from minor complications to more serious ones. For example, a lower BAC percentage is usually accompanied by temporary side effects that disappear within a few hours. However, as the percentage of BAC increases, the symptoms become much more serious and can be life-threatening (Table 1).

How alcohol abuse affects the body. Alcohol abuse can negatively affect the body both externally and internally. Although you may not be able to see the damage that alcohol is doing to your internal organs, it is important not to ignore the warning signs of alcohol addiction. Sometimes the harmful effects are not detected until later in life, which makes it difficult to eliminate many health complications. Short-term effects: lack of coordination, mood swings and nausea. Loss of sensation in hands and feet. Long-term consequences of prolonged and excessive alcohol consumption can consist of:

- × brain damage;
- × memory loss;
- × hallucinations;
- × perplexity;
- × hypertension;
- × enlarged heart;
- × irregular pulse;
- × increased risk of infections including tuberculosis, cirrhosis of the liver, hepatitis, increased risk of cancer, bleeding, ulcers, and muscle weakness.

The best way to prevent health problems now and in the future is to stop drinking excessively through a professional treatment program.

The effect of alcohol on brain can be felt quickly. Drinking alcohol can not only cause temporary complications, such as loss of memory and coordination, but can also lead to long-term side effects that are sometimes irreversible. Long-term and excessive alcohol consumption can affect the functioning of the brain, as well as its structure. Damage to various areas of the brain, especially the cerebellum, limbic system, and cerebral cortex, can significantly affect the body's communication pathways. For example, the cerebellum is responsible for your body's motor skills. When alcohol affects this area of the brain, you are more likely to experience a loss of balance, as well as problems with memory and emotional response.

The effect of alcohol on heart. The heart is extremely vulnerable to the negative effects of alcohol consumption. Over time, alcohol abuse can weaken the heart, affecting how oxygen and nutrients are delivered to other vital organs in your body. Drinking too much alcohol can raise the

level of triglycerides, a type of fat in your blood. High levels of triglycerides contribute to the risk of developing dangerous diseases such as heart disease and diabetes. Some early cardiovascular effects, such as high blood pressure and irregular heartbeats, can lead to many problems later. Long-term effects of excessive alcohol consumption can include cardiomyopathy, stroke, and sudden cardiac death.

The effect of alcohol on liver. Heavy drinkers are at risk of developing harmful, potentially life-threatening liver problems. When you drink, your liver breaks down the alcohol and removes it from your blood. However, an excessive amount of alcohol in a short period of time can suppress the metabolic process and lead to fatty liver. Fatty liver is a chronic condition that involves the accumulation of harmful fats in the liver. Obesity is one of the biggest factors of fatty liver. It can also cause liver failure and type II diabetes. Other serious liver complications associated with long-term and excessive alcohol consumption include alcoholic hepatitis, fibrosis, and cirrhosis of the liver. Although each of these conditions is treatable, they require a proper medical diagnosis and an intensive treatment plan.

Alcohol is the biggest cause of liver disease in the UK. Regular consumption of alcohol more than the recommended limit increases the risk of liver disease and liver cancer. Although most drinkers are legal drinkers, around 1 in 4 drinks in ways that could harm their health. This can cause scarring that accumulates and leads to cirrhosis [70].

The effect of alcohol on pancreas. The pancreas is part of the digestive process and helps regulate blood sugar. Drinking alcohol over many years can begin to negatively affect your pancreas and cause long-term health complications. Unfortunately, the early stages of many pancreatic diseases are often not felt and therefore not treated. Long-term alcohol abuse can cause swelling of the blood vessels around the pancreas, leading to pancreatitis. This greatly increases the risk of developing pancreatic cancer, a type of cancer that spreads quickly and is very dangerous. Symptoms of an acute pancreatic attack may include abdominal pain, diarrhea, nausea, rapid heart rate, and fever. Although pharmacotherapy with drugs and other treatments can help manage the effects of pancreatitis, it is very difficult to reverse the condition.

Alcohol poisoning. Too much alcohol consumed in a short period of time can slow your breathing and heart rate, lower your body temperature, and cause confusion, vomiting, seizures, loss of consciousness, and even death. Alcohol poisoning can also suppress your gag reflex, increasing the risk that you will choke on your own vomit if you pass out. If a person has consumed alcohol and is unconscious or in a semi-conscious state, his breathing is slowed down, his skin is sticky, a strong smell of alcohol is felt, he may have alcohol poisoning.

As a legislative initiative, we offer the following proposals to the Verkhovna Rada of Ukraine regarding editorial changes and additions to Article 204 of the Criminal Code of Ukraine "Illegal manufacture, storage, sale or transportation for the purpose of sale of excise goods" [62], regarding the strengthening of criminal liability, for example:

according to the 1st part – "Punished by deprivation of liberty for a term of three to five years and a fine of five thousand to ten thousand non-taxable minimum incomes of citizens with confiscation of property, seizure and destruction of illegally manufactured goods or products, production tools, raw materials for their production";

according to the 2nd part – "Illegal production of ethyl alcohol, alcohol distillates, alcoholic beverages, beer, tobacco products, tobacco, industrial tobacco substitutes, fuel or other excise goods or committed by a person who was previously convicted under this article, as well as sale of such goods, which led to poisoning, is punishable by imprisonment for a term of five to ten years and a fine of ten thousand to fifty thousand tax-free minimum incomes of citizens with confiscation of property, seizure and destruction of illegally produced or purchased goods, production tools, raw materials for their production";

according to the 3rd part – "They shall be punished by imprisonment for a term of ten to fifteen years or life imprisonment, and a fine of fifty thousand to one hundred thousand non-taxable minimum incomes of citizens with confiscation of property, with the seizure and destruction of illegally produced or acquired products, equipment for their production".

At the same time, Article 204 of the Criminal Code of Ukraine should be supplemented with part 4, regarding the protection of "Persons who voluntarily surrendered to illegal acquisition for the purpose of sale or storage for this purpose, as well as sale or transportation for the purpose of sale of illegally produced ethyl alcohol, alcohol distillates, alcoholic beverages, beer, tobacco products, tobacco, industrial tobacco substitutes, fuel or other excise goods".

Normative proposals are given in the Table 2.

Table 2. Normative proposals for Article 204 of the Criminal Code of Ukraine.

No.	Disposition of Article 204 of the Criminal Code of Ukraine "Illegal manufacture, storage, sale or transportation for the purpose of sale of excise goods"	Normative proposals for the disposition of Article 204 of the Criminal Code of Ukraine "Illegal manufacture, storage, sale or transportation for the purpose of sale of excise goods"
1.	Illegal acquisition for the purpose of sale or storage for this purpose, as well as sale or transportation for the purpose of sale of illegally produced ethyl alcohol, alcohol distillates, alcoholic beverages, beer, tobacco products, tobacco, industrial tobacco substitutes, fuel, or other excise goods, - should be punished by a fine of five thousand to ten thousand tax-free minimum incomes of citizens with confiscation and destruction of illegally manufactured goods.	Illegal acquisition for the purpose of sale or storage for this purpose, as well as sale or transportation for the purpose of sale of illegally produced ethyl alcohol, alcohol distillates, alcoholic beverages, beer, tobacco products, tobacco, industrial tobacco substitutes, fuel, or other excise goods, - should be punished by deprivation of liberty for a term of three to five years and a fine of five thousand to ten thousand tax-free minimum incomes of citizens with confiscation of property, seizure and destruction of illegally manufactured goods or products, production tools, raw materials for their manufacture.
2.	Illegal production of ethyl alcohol, alcohol distillates, alcoholic beverages, beer, tobacco products, tobacco, industrial tobacco substitutes, fuel or other excise goods or committed by a person who was previously convicted under this article, - should be punished by imprisonment for a term of three to five years with confiscation and destruction of illegally produced or purchased goods, production tools, and raw materials for their production.	Illegal manufacture of ethyl alcohol, alcohol distillates, alcoholic beverages, beer, tobacco products, tobacco, industrial tobacco substitutes, fuel or other excise goods or committed by a person who was previously convicted under this article, as well as the sale of such goods, which led to poisoning, – should be punished by deprivation of liberty for a term of five to ten years and a fine of ten thousand to fifty thousand tax-free minimum incomes of citizens with confiscation of property, seizure, and destruction of illegally produced or purchased goods, production tools, raw materials for their production.
3.	Illegal production of goods specified in the first or second parts of this article, which pose a threat to the life and health of people, as well as the sale of such goods, which led to poisoning or caused the death of a person, - should be punished by deprivation of liberty for a term of eight to ten years with	Illegal production of goods specified in the first or second parts of this article, which pose a threat to the life and health of people, as well as the sale of such goods, caused the death of a person, - should be punished by deprivation of liberty for a term of ten to fifteen years or life

	confiscation of property, seizure, and destruction of illegally produced or purchased products, equipment for their production.	imprisonment, and a fine of fifty thousand to one hundred thousand non-taxable minimum incomes of citizens with confiscation of property, seizure, and destruction of illegally produced or purchased products, equipment for their production.
4.		A person who voluntarily surrendered illegally acquired for the purpose of sale or storage for this purpose, as well as sale or transportation for the purpose of sale of illegally produced ethyl alcohol, alcohol distillates, alcoholic beverages, beer, tobacco products, tobacco, industrial tobacco substitutes, fuel, or other excise goods (part one of Article 204 of this Code).

There are many ways to reduce your alcohol consumption. Try a few and stick with the ones that work for you. Do not worry about the occasional mistake, no one can be perfect all the time. The most important thing is to continue. Think about what happened and why? Is there anything you might do differently in the future? If you are not sure where to start, try one of the ideas [70, 71].

- Choose a less strong drink or go for a low-alcohol or no-alcohol version. Beer, wine or cocktail, the choice is large.
- Set a budget for yourself. You might be surprised at how much you spend on alcohol.
- Cut your budget by setting a fixed budget and save extra money for pleasure (new apartment, new car, new clothes, etc.).
- Make friends with a friend. You can help each other achieve your goals.
- Track your drinks so you know where you started and see your progress. It can also help you cut back.
- Make all other drinks non-alcoholic.
- Stay out of rounds and control.
- Do not let other people set the pace.
- It is easy to drink more than you want when you are keeping up with the group.
- Do not refill your glass as it is easy to lose track of the volume of alcohol you have drunk.
- Try measuring the glasses you use at home to know how much you drink.
- Drink alcohol only at dinner.
- Avoid drinks before or after.
- Do something different when you go out: try bowling, going to the cinema or having a coffee instead of going to the pub.
- Many people are trying to cut back on alcohol, so there is no need to feel ashamed or embarrassed.
- The most important step is making the decision to change.
- If you need support, you can: talk to your lawyer, drug addiction doctor, psychiatrist, or family medicine practitioner.

Concluding the article, we again read the victorious report of the Kyiv City Prosecutor's Office (Forensic and pharmaceutical example No. 5) on the initiation of a criminal case under Part 3 of Art. 204 of the Criminal Code of Ukraine [72]. Unfortunately, this is only a statement of fact, but there is no completeness, comprehensiveness, and objectivity of information, i.e.: how many people were injured because of using a surrogate; what economic damage has been caused to the state; which of the citizens of Ukraine from state and self-government bodies, police and trade organizations were involved in the scheme of selling counterfeit goods.

Forensic and pharmaceutical example No. 5. Pre-trial investigation is carried out by detectives of State Bureau of Economic Safety in the city of Kyiv and the Kyiv region under the

operational support of the State Security Service of Ukraine in the city of Kyiv and the Kyiv region under the procedural guidance of the Kyiv City Prosecutor's Office, which stopped the illegal activities of an organized criminal group engaged in illegal production and sale of excise goods, criminal proceedings were instituted under part 3 of Art. 204 of the Criminal Code of Ukraine [72].

The investigation established that members of an organized criminal group organized the illegal circulation (production, storage, transportation, and sale) of falsified alcohol on the territory of Kyiv region. Members of the group poured alcoholic mixtures into tetra packs and plastic containers under the guise of well-known brands. As part of the criminal proceedings, during the execution of investigative actions based on the sanction of the court on April 12, 2023, investigators and operatives, in the presence of witnesses, conducted a search of warehouses located in the Kyiv region and seized: 15,000 liters of counterfeit alcohol; 3.5 thousand liters of alcohol-containing substance; equipment for mass production of alcohol; industrial line and container for bottling; a car in which the dealers stored and transported products. The estimated value of the confiscated counterfeit goods and property is almost UAH 4 million. Investigators have appointed the necessary forensic examinations, the issue of seizing seized property is being resolved. Investigative actions in criminal proceedings are ongoing.

The sanction of the article provides for the maximum punishment in the form of deprivation of liberty for a term of up to 10 years with confiscation and destruction of illegally manufactured goods. As the court will decide, and this does not solve the issues of protecting the rights of the injured citizens, it does not solve the issues of socio-economic and medical-pharmaceutical provision of their right to long-term life and quality health. It does not resolve the issue of compensation to health care institutions, compensation for a bed of a poisoned citizen who has been receiving outpatient or inpatient treatment for a long time, etc.

Established that adulterated alcohol is in the system of multidisciplinary forensic and pharmaceutical, criminal and legal, socio-economic, clinical and pharmacological studies during circulation, as the main factor in the destruction of the body of a sick person, as a result of which a person's disability or premature death occurs. Studying the experience of the United States, where, as Gonzalez I. writes, more than 300 million people live, 88,000 lives lost due to excessive alcohol consumption may not seem so great [71]. Not only do 88,000 people die from alcohol abuse, but how many more lives around them are affected by substance use? Friends and family of those who have tragically lost their lives to this alcoholic drug. Those who do not die at the hands of alcohol, but still experience a negative impact on health and life. Short-term forensic health risks from excessive alcohol use include injury (such as from a car accident, fall, drowning or even burns), violence (including murder, suicide, sexual and intimate partner violence), alcohol poisoning, risky sexual behavior (eg, unprotected sex), miscarriage or stillbirth, or fetal alcohol spectrum disorders for pregnant women. The long-term consequences of excessive alcohol consumption can be truly dire, affecting countless Americans. These include many chronic diseases and other serious conditions:

- High blood pressure, heart disease, stroke, liver disease and digestive problems.
- Cancer of the breast, oral cavity, throat, esophagus, liver, and colon.
- Learning and memory problems, including dementia and poor school performance.
- Mental health problems, including depression and anxiety.
- Social problems including loss of productivity, family problems and unemployment.
- Alcohol disorder, formerly known as alcohol dependence or alcoholism.

Conclusions. Interdisciplinary forensic and pharmaceutical, criminal and legal, clinical and pharmacological study was conducted to study the circulation of adulterated alcohol as a risk factor in the destruction of the body, life, and health of a sick person. The need to strengthen criminal responsibility for offenders who carry out illegal production and sale of surrogate (falsified alcohol products) through the legal sector of Ukraine's economy (shops, cafes, restaurants) – places of mass gathering of people was substantiated. Proven that there are large profits from the sale of falsified alcohol products in illegal circulation through the legal sector of the economy. Injured citizens and their families need protection from the state, socio-economic and free medical and pharmaceutical assistance, which should be enshrined in the laws and regulatory acts of Ukraine. A rule-making

initiative was developed to strengthen criminal liability under Article 204 of the Criminal Code of Ukraine "Illegal manufacture, storage, sale or transportation for the purpose of sale of excise goods". The author insists on the need for further study of forensic pharmaceutical practice and bringing the results to the public and the scientific community. It was proposed to discuss the research topic at the scientific and practical conference "Medical and Pharmaceutical Law of Ukraine".

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References.

1. Harmful use of alcohol kills more than 3 million people each year, most of them men. *WHO*. 21.09.2018. URL: <https://www.who.int/news/item/21-09-2018-harmful-use-of-alcohol-kills-more-than-3-million-people-each-year--most-of-them-men>.
2. Law of Ukraine "On Advocacy and Advocacy Activities". *Verkhovna Rada of Ukraine*. 2013. URL: <https://zakon.rada.gov.ua/laws/show/5076-17#Text>.
3. Order of the Ministry of Health of Ukraine dated January 17, 1995 No. 6 "On the development and improvement of the forensic medical service of Ukraine". *Verkhovna Rada of Ukraine*. URL: <https://zakon.rada.gov.ua/laws/show/z0248-95#Text>.
4. Constitution of Ukraine. *Verkhovna Rada of Ukraine*. 1996. URL: <https://zakon.rada.gov.ua/laws/show/254%D0%BA/96-%D0%B2%D1%80#Text>.
5. Law of Ukraine "On state regulation of the production and circulation of ethyl alcohol, cognac and fruit alcohol, alcoholic beverages, tobacco products, liquids used in electronic cigarettes, and fuel". *Verkhovna Rada of Ukraine*. 1995. URL: <https://zakon.rada.gov.ua/laws/show/481/95-%D0%B2%D1%80#Text>.
6. Shapovalov V., Diachenko A. Interdisciplinary Forensic and Pharmaceutical Study of Illegal circulation of falsified alcoholic beverages to combat crime and prevent Public Health disorders. *SSP Modern Pharmacy and Medicine*. 2023. Vol.3. No.1. P.1-12. URL: <https://doi.org/10.53933/ssppmpm.v3i1.86>.
7. Harmful effects of alcohol on the human body. *Zolochiv District Office of the Main Office of the State Production and Consumer Service in Kharkiv Region*. 03.06.2020. URL: <https://zlochivska.gromada.org.ua/news/1591169594/>.
8. Surrogate alcohol killed six people in Boryspil. *Radio Svoboda*. 22.05.2018. URL: <https://www.radiosvoboda.org/a/news/29241597.html>.
9. Half of poisonings with fake alcohol in recent years ended in death - statistics. *Radio Svoboda*. 2018. URL: <https://www.radiosvoboda.org/a/news-otrueniennia-pidrobny-alkoholem/29573263.html>.
10. Sosin I.K., Chuiev Yu.F., Shapovalova V.O. et al. Narcology: National Textbook. *Kharkiv: Kolehium*. 2014. 1500 p.
11. Shapovalova V. Interdisciplinary Pharmacoeconomic Research Concerning the Pharmacotherapy of Alcoholic Hepatitis in Conditions of Covid-19 Pandemic. *SSP Modern Pharmacy and Medicine*. 2023. Vol. 3. No 2. P. 1-10. URL: <https://doi.org/10.53933/ssppmpm.v3i2.87>.
12. Shapovalova V. The ICD-11 For the Twenty-First Century: The First View from The Organizational, Legal, Clinical and Pharmacological Aspects. *SSP Modern Pharmacy and Medicine*. 2022. Vol. 2. No 1. P. 1-13. <https://doi.org/10.53933/ssppmpm.v2i1.37>.
13. Hayduchok I.G., Shapovalova V. O., Ishcheikin K.E. et al. Pharmacoeconomic approaches for pharmacotherapy of rheumatoid arthritis. *Likars'ka Sprava*. 2021. Vol. 1-2. P. 70-79. URL: [https://doi.org/10.31640/JVD.1-2.2021\(11\)](https://doi.org/10.31640/JVD.1-2.2021(11)).
14. Shapovalova V., Abrosymov O. Forensic and pharmaceutical qualification of the administrative offences connected with coursing of harm to heal of the population. *SSP Modern Law and Practice*. 2021. Vol. 1. No 1. P. 1-7. URL: <https://www.ssp.ee/index.php/mlp/article/view/19>.

15. Gudzenko A., Shapovalov V., Shapovalov V. et al. Forensic pharmacy: analysis of complaints. RS Global Sp. z OO: Poland. *Science Review*. 2021. Vol. 2 (37). P. 1-6. URL: https://www.researchgate.net/profile/Viktoriiia-Shapovalova-2/publication/369088250_Scholarly_Publisher_RS_Global/links/6408d443b1704f343fb4bbfe/Scholarly-Publisher-RS-Global.pdf.
16. Shapovalov V. (Jr.), Shapovalova V., Shapovalov V. Forensic and pharmaceutical research on the impact of drugs on the safety, life and health of road users within the organization of pharmaceutical business, drug technology, pharmaceutical and medical law in Ukraine. *Health of Society*. 2022. Vol. 10(4). P. 127–132. URL: <https://doi.org/10.22141/2306-2436.10.4.2021.246355>.
17. Gudzenko A. A., Shapovalov V. (Jr.) V., Shapovalova V.A. et al. Organizational and legal, forensic and pharmaceutical researches of pharmaceutical provision for mental disorders of victims in the emergencies at regional level. *Likars'ka Sprava*. 2018. Vol. 7-8. P. 149-157. URL: [https://doi.org/10.31640/JVD.7-8.2018\(24\)](https://doi.org/10.31640/JVD.7-8.2018(24)).
18. Shapovalov V.V., Gudzenko A.A., Shapovalova V. A. et al. Results of the ABC/VEN-analysis of narcotic analgesic drugs used in the pharmacotherapy of malignant tumors. *Likars'ka Sprava*. 2018. Vol. 5-6. P. 162-168. URL: [https://doi.org/10.31640/JVD.5-6.2018\(28\)](https://doi.org/10.31640/JVD.5-6.2018(28)).
19. Shapovalova V.A., Shapovalov V.V., Shapovalov V.V. et al. Forensic and pharmaceutical assessment of polydrug addiction at combined use of psychoactive substances. *Likars'ka Sprava*. 2018. Vol. 1-2. P. 171-177. URL: [https://doi.org/10.31640/JVD.1-2.2018\(29\)](https://doi.org/10.31640/JVD.1-2.2018(29)).
20. Shapovalov V.V. (Jr.), Linskiy I.V. Evidence-based pharmacy: definition of the control regime for the medicines in the pharmaceutical correction schemes of the opioid dependence. *Pharmaceutical Journal*. 2013. No. 3. P. 35-40. URL: <https://pharmj.org.ua/index.php/journal/article/view/399>.
21. Shapovalov V. Forensic pharmacy, organization of pharmaceutical business, drug technology, medical, pharmaceutical, and criminal law: the state system of combating the illegal circulation of narcotic drugs and psychotropic substances and their abuse in pandemic condition. *SSP Modern Law and Practice*. 2022. Vol.2. No.3. P.1-35. URL: <https://doi.org/10.53933/sspmlp.v2i3.66>.
22. Shapovalova V., Zakharchenko I. Organizational and legal approaches to reforming of the law enforcement system of Ukraine: illegal circulation of psychoactive substances and addictive dependence. *SSP Modern Law and Practice*. 2021. Vol. 1. No.1. P.1–22. URL: <https://doi.org/10.53933/sspmlp.v1i1.20>.
23. Shapovalov V. (Jr.), Gudzenko A., Shapovalova V. et al. Forensic and pharmaceutical study of the presence of a causal link between the degree of alcohol abuse and qualification level of the respondents. *Pharmacia*. 2017. Vol.66. No.3. P. 31–39. URL: <http://bsphs.org/wp-content/uploads/2017/11/Shapovalov.pdf>.
24. Shapovalova V.A., Sosyn I.K., Butenko G.M. et al. Pharmaceutical law in narcology. *Kharkov: "Fact"*. 2004. 800 p.
25. Osyntseva A. Polydrug addiction: multidisciplinary forensic and pharmaceutical, organizational and legal, and technological study of factors of formation and development. *SSP Modern Pharmacy and Medicine*. 2022. Vol.2. No.4. P.1-14. URL: <https://doi.org/10.53933/sspmpm.v2i4.72>.
26. Shapovalova V.A., Voloshyn P.V., Stefanov A.V. et al. Medicines for neurologists, psychiatrists and narcologists. *Kh.: Fakt*. 2003. 784 p.
27. Linskiy I.V., Minko O.I. Medical and pharmaceutical law: the current state and directions of reforming drug addiction care for the population of Ukraine. *Ukraine Journal of Psychoneurology*. 2012. T. 20. Issue 2 (71). Addition. P. 142-146.
28. Chuiev Y., Shapovalova V. Integrated ABC/VEN-analysis of drug prescriptions in pharmacotherapeutic schemes for relief of drunken forms of alcohol dependence. *SSP Modern Pharmacy and Medicine*. 2022. Vol.2. No.1. P.1-14. URL: <https://doi.org/10.53933/sspmpm.v2i1.35>.
29. Krasnianska T., Ponomarenko M. Organization of the pharmaceutical business, drug technology and forensic pharmacy: modern trends in the development of the science of

- pharmaceutical law during the COVID-19 pandemic. *SSP Modern Pharmacy and Medicine*. 2022. Vol.2. No.3. P.1-15. URL: <https://doi.org/10.53933/sspmmpm.v2i3.59>.
30. Gryzodub O., Shapovalov V. Quality systems in Pharmacy: multidisciplinary context of the State Pharmacopoeia of Ukraine. *SSP Modern Law and Practice*. 2023. Vol.3. No.1. P.1-23. URL: <https://doi.org/10.53933/sspmplp.v3i1.81>.
31. Shapovalova V. Monkeypox virus – new challenges of modernity: experimental organizational and legal, clinical and pharmacological studies. *SSP Modern Pharmacy and Medicine*. 2022. Vol.2. N.3. P.1–15. URL: <https://doi.org/10.53933/sspmmpm.v2i3.54>.
32. Shapovalova V. An Innovative multidisciplinary study of the availability of coronavirus vaccines in the world. *SSP Modern Pharmacy and Medicine*. 2022. Vol.2. N.2. P.1–17 URL: <https://doi.org/10.53933/sspmmpm.v2i2.45>.
33. Shapovalova V. Alcoholic Hepatitis: An experimental meta-analysis. *SSP Modern Pharmacy and Medicine*. 2023. Vol.3. No.1. P.1-11. URL: <https://doi.org/10.53933/sspmmpm.v3i1.77>.
34. Shapovalov V. Intentional homicides committed while under the influence of alcohol during the pandemic: an interdisciplinary forensic and pharmaceutical, forensic and medical, forensic and narcological, criminalistics, and criminal and law study of a contemporary problem. *SSP Modern Law and Practice*. 2022. Vol.2. No.4. P.1-32. URL: <https://doi.org/10.53933/sspmplp.v2i4.74>.
35. Shapovalov V.V., Linsky I.V. Forensic pharmacy: the study of disposition to health addictive disorders pf the drug addiction patients with deviant behavior. *Pharmaceutical Journal*. 2011. Issue 6. P. 30-34. URL: <https://pharmj.org.ua/index.php/journal/article/view/564>.
36. Shapovalov V.V., Linsky I.V. Forensic pharmacy, forensic narcology: scoring method of the predisposing to psychical and behavioral frustrations health by reason of psychoactive substances abusing. *Pharmaceutical Journal*. 2010. Issue 1. P. 36-41. URL: <https://pharmj.org.ua/index.php/journal/article/view/864>.
37. Harmful effect of alcohol on the human body". Pokrovsky district branch of the branch of the State institution "Probation Center" in the Dnipropetv region. *Mysta.ua*. 2023. URL: <https://mistaua.com/%D0%8E/211681/?setcity=365>.
38. Shapovalov V.V. (mol.), Shapovalova V.O., Shapovalov V.V. et al. Analiz asortymentu likarskykh zasobiv, shcho mistiat u svoiemu skladi spyrt etylovyi (etanol) na zasadakh sudovoi farmatsii. *East European Scientific Journal (Wschodnioeuropejskie Czasopismo Naukowe)*. 2016. N. 8, vol. 4. P. 147–156.
39. Shapovalov V. (Jr.), Gudzenko A., Shapovalova V. at. el. Forensic and pharmaceutical study of the presence of a causal link between the degree of alcohol abuse and qualification level of the respondents. *Pharmacia*. 2017. Vol. 66. N. 3. P. 31–39. URL: <http://bsphs.org/wp-content/uploads/2017/11/Shapovalov.pdf>.
40. Chuiev Y., Shapovalova V. Interdisciplinary pharmacoeconomic study of pharmacotherapy of cupping of drunk forms of alcohol dependence: clinical and pharmacological, organizational, legal and marketing experiment. *SSP Modern Pharmacy and Medicine*. 2021. Vol. 1. N. 2. P. 1-12. URL: <https://doi.org/10.53933/sspmmpm.v1i2.24>.
41. Shapovalova V.O., Vasina Y.V., Shapovalov V.V. et al. Study of turnover extemporaneous preparations in Ukraine on the basis of pharmaceutical law. *Pharmaceutical Journal*. 2016. No 1. P. 77-85. URL: <https://pharmj.org.ua/index.php/journal/article/view/155>.
42. Ryabukha O. COVID-19 Pandemic encourages to deepen the study of the thyroid gland: correlation portraits as a means of research in different directions of follicular thyrocytes activities. *SSP Modern Pharmacy and Medicine*. 2022. Vol.2. No.1. P.1-21. URL: <https://doi.org/10.53933/sspmmpm.v2i1.40>.
43. More than 70% of deceased patients with COVID-19 in Ukraine had cardiovascular diseases. *LB.ua*. 06.04.2020. URL: https://lb.ua/society/2020/04/06/454633_bole_70_umershih_patsientov.html.
44. The effect of COVID-19 on alcohol consumption, and policy responses to prevent harmful alcohol consumption. *OECD*. 19.05.2021. URL: <https://www.oecd.org/coronavirus/policy->

[responses/the-effect-of-covid-19-on-alcohol-consumption-and-policy-responses-to-prevent-harmful-alcohol-consumption-53890024/](https://doi.org/10.53933/sspmpl.v2i1.39).

45. Jones L, Hameiri S. Explaining the failure of global health governance during COVID-19. *International Affairs*. 2022. Vol. 98, Issue 6. P. 2057–2076. URL: <https://doi.org/10.1093/ia/iia231>.

46. Shapovalova V.A., Zbrozhek S.I., Shapovalov V.V. et al. Coronavirus disease pandemic 2019: growth of epidemic dangers. *Acta scientific pharmaceutical sciences*. 2020. Vol. 4. Iss. 7. P. 61–68. URL: <https://www.actascientific.com/ASPS/ASPS-04-0559.php>.

47. Tukhar I., Shapovalova V., Shapovalov V. et al. Pharmacological view on the problem of comorbidity in the pharmacotherapy of chronic pancreatitis. *Science Review*. 2021. Vol. 3. No. 38. P.1-5. DOI: https://doi.org/10.31435/rsglobal_sr/30072021/7591. URL: <https://rsglobal.pl/index.php/sr/article/view/1995>.

48. Shapovalov V. Multidisciplinary Study of Medical Errors in the System of Legal Relations Between "Doctor-Patient-Pharmacist-Advocate" During the Circulation of Drugs. *SSP Modern Pharmacy and Medicine*. 2023. Vol.3. No.2. P.1-11. URL: <https://doi.org/10.53933/sspmpl.v3i2.88>.

49. Hayduchok I., Shapovalov V. Covid-19: multidisciplinary researches of forensic and pharmaceutical risks and causal relationships of unqualified medical care for patients during pandemic. 2022. *SSP Modern Law and Practice*. Vol.2. No.1. P.1-25. URL: <https://doi.org/10.53933/sspmpl.v2i1.39>.

50. Shapovalova V. An Innovative multidisciplinary study of the availability of coronavirus vaccines in the world. *SSP Modern Pharmacy and Medicine*. 2022. Vol.2. N.2. P.1–17 URL: <https://doi.org/10.53933/sspmpl.v2i2.45>.

51. Shapovalova V. Forensic and pharmaceutical risks in the organization of pharmacotherapy of covid, post-covid and long-covid disorders. COVID-19 and vaccination practice standards. *SSP Modern Pharmacy and Medicine*. 2022. Vol. 2. No. 4. P. 1–24. URL: <https://doi.org/10.53933/sspmpl.v2i4.69>.

52. Assessment of the socio-economic impact of COVID-19 on Ukraine. Crisis Response and Post-Crisis Recovery Action Plan. *Ukraine.UN*. 2020. 173c. URL: https://ukraine.un.org/sites/default/files/2021-06/SEIA_UKR.pdf.

53. 14.9 million excess deaths associated with the COVID-19 pandemic in 2020 and 2021. *WHO*. 05.05.2022. URL: <https://www.who.int/news/item/05-05-2022-14.9-million-excess-deaths-were-associated-with-the-covid-19-pandemic-in-2020-and-2021>.

54. The number of fatal alcohol poisonings decreased four times. *Opendatabot*. 06.08.2021. URL: <https://opendatabot.ua/analytics/alcohol-death-2>.

55. Caution - poisoning with surrogate alcohol! *Department of Health of the Kropyvnytskyi City Council*. 03.04.2023 URL: <https://uozkmr.gov.ua/main/1822-oberezhno-otruyennya-surogatnim-alkogolem.html>.

56. Caution - poisoning with surrogate alcohol! *The main department of the State Production and Consumer Service in Lviv region*. 10.03.2017. URL: <https://lvivdpss.gov.ua/oberezhno-otruyennya-surohatnym-alkoholem/>.

57. Prevention of poisoning with surrogate alcohol. *Charitable village council of Pervomaysky district of Mykolaiv region*. 19.08.2022. URL: <https://blagodatnenska-gromada.gov.ua/news/1660897903/>

58. Operational information on poisoning with falsified dangerous alcohol as of November 10, 2016. *State Production and Consumer Service*. 10.11.2016 URL: <https://dpss.gov.ua/news/operativna-informaciya-pro-otruyennya-falsifikovanim-nebezpechnim-alkogolem-stanom-10112016>.

59. Chernyavskiy V.M. Let's take care of our health together! How to protect yourself from alcohol poisoning. *State Production and Consumer Service*. 11.01.2017. URL: <https://consumer-cv.gov.ua/blog/2017/01/11/yak-vberetysya-vid-alkogolnogo-otruyennya/>.

60. Six members of an organized group who illegally manufactured and sold alcoholic beverages and tobacco products in the city of Dnipro will be tried. *Dnipropetrovsk Regional Prosecutor's Office*.

- 11.04.2023. URL: <https://dnipr.gp.gov.ua/ua/news.html? m=publications& c=view& t=rec&id=331631>.
61. The activity of a group of persons involved in the illegal production and sale of counterfeit alcohol was terminated. *Odesa Regional Prosecutor's Office*. 04.04.2023. URL: <https://od.gp.gov.ua/ua/news.html? m=publications& c=view& t=rec&id=331130>.
62. Criminal Code of Ukraine. *Verkovna Rada of Ukraine*. URL: <https://zakon.rada.gov.ua/laws/show/2341-14/page15#Text>.
63. Shapovalov (Jr.) V., Gudzenko A., Shapovalova V. et al. Forensic and pharmaceutical analysis of addictive morbidity because of the use of narcotic psychoactive substances in Ukraine (retrospective aspect). *International Journal of Pharmaceutical Sciences and Research*. 2018. Vol. 3. Is.3. P.22-25. URL: <http://www.pharmacyjournal.net/archives/2018/vol3/issue3>.
64. Osym Y. In a village in the Lviv region, warehouses of falsified alcohol worth a million hryvnias were discovered. *Lviv portal*. 05.03. 2021. URL: <https://portal.lviv.ua/news/2021/03/05/u-seli-na-lvivshchyni-vykryly-sklady-falsyfikovanoho-alkoholiu-na-miljon-hryven>.
65. Zakharchenko N. Law enforcement agencies of Chornobayiv district are investigating the fact of poisoning people with surrogate alcohol. *Information publication of Cherkasy region "VyCherpno"*. 06.10.2016. URL: <https://vycherpno.ck.ua/pravoohoronimi-organami-chornobayivskogo-rajonu-rozsliduyetsya-fakt-otruyennya-lyudej-surogatnim-alkogolem/>.
66. Zozulya I.S., Kurdil N.V., Padalka V.N. et al. Acute alcohol poisoning in adults, alcoholic coma: practical recommendations at the hospital stage. *Ukrainian medical journal*. 2017. No. 3(119). URL: <https://www.umj.com.ua/article/110491/gostri-otruyennya-alkogolem-u-doroslih-alkogolna-koma-praktichni-rekomendatsiyi-na-dogospitalnomu-etapi>.
67. The effect of alcohol on the human body. *Communal Enterprise "Regional Center of Public Health" of the Dnipropetrovsk Regional Council*. 13.04.2023. URL: <https://dniprophc.com.ua/gromadyanam/promoc%D1%96ya-zdorovya/borotba-z%D1%96-shk%D1%96dlivimi-zvichkami/the-effect-of-alcohol-on-the-human-body/#:~:text=>.
68. Nedashkivskiy S.M. Methanol poisoning: diagnosis, pathophysiology, clinical manifestations, intensive therapy. Modern approaches. *Emergency medicine*. 2017. No. 1 (80). URL: http://www.mif-ua.com/archive/article_print/44180.
69. Alcohol Abuse. *PMGT*. 2023. URL: https://pmgt.org.nz/alcohol-abuse/?gclid=CjwKCAjw8-OhBhB5EiwADyoY1Tg8E6VX7efXJ5zpuw3NvKTHj3Vv6Zl-FX6wS34XhHnSJoNyZKIF3RoCn8kQAvD_BwE#Ways-to-reduce-your-consumption?utm_term=alcohol%20abuse&utm_campaign=Crime+Prevention+Topics&utm_source=adwords&utm_medium=ppc&hsa_acc=3901438876&hsa_cam=7792641513&hsa_grp=89966328868&hsa_ad=396296218755&hsa_src=g&hsa_tgt=kwd-15663203&hsa_kw=alcohol%20abuse&hsa_mt=b&hsa_net=adwords&hsa_ver=3.
70. Alcohol and liver disease. *British Liver Trust*. 2023. URL: https://britishlivertrust.org.uk/information-and-support/risks-and-causes/alcohol/?utm_source=google&utm_medium=cpc&gclid=CjwKCAjw8-OhBhB5EiwADyoY1XFdtEU74OGmTlua7CB05fWK_vZrrzUMUezRch8SszBj0QhbadV2bRoCiVcQAvD_BwE.
71. Gonzalez I. Everything You Need to Know About the Harms of Alcohol. *The Temper*. 29.04.2019. URL: <https://www.thetemper.com/alcohol-awareness-month-facts/>.
72. Large-scale underground production of alcohol was exposed in the Kyiv region - more than 15 thousand liters of "product" were seized. *Kyiv City Prosecutor's Office*. 14.04.2023. URL: <https://kyiv.gp.gov.ua/ua/news.html? m=publications& t=rec&id=331887>.