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## **PROSPECTS OF MULYCOMPOUND PLANT FORMULATIONS FOR TREATMENT OF MENTAL DISORDERS**

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Exposure to trauma is common and its consequences on the individuals and communities affected can hardly be overestimated [1]. Mass traumatization was and unfortunately still is related to military conflicts which took place in European countries, as I, II World War, and now Ukraine War, or other continents where European military forces were involved in conflicts.

Throughout the whole post-World War period there was no awareness of the consequences of trauma exposure. Consequently, no specific care was developed and provided. In contrast, the war in Yugoslavia in the 1990s brought about a high level of awareness of trauma and posttraumatic stress disorder (PTSD). Decades later the waraffected population reports an 18% prevalence of PTSD. PTSD is a mental health disorder caused by witnessing or experiencing a traumatic event [2]. Those experiencing PTSD, many of whom may be veterans or survivors of a natural disaster or violent act, might turn to illegal drugs to self-medicate feelings of fear, anxiety, and stress. Most people who have suffered through traumatic events eventually overcome the anxiety, depression, and agitation caused by those experiences. But when PTSD develops, these symptoms don't just go away. They might last for months or years after the event. Numerous research studies on PTSD have shown that females have a two to three times higher risk of developing PTSD than males[3].

Today, according to the data of the sociological studying, more than 60% of Ukrainians felt a deterioration in their mental health. And by the data of the Ministry of Health, today in Ukraine at least 15 million people are potentially at risk of mental disorders (MD), such as depression, anxiety and comorbid with PTSD and about 3-4 million of them will need to be prescribed drug treatment. MD have negative consequences on the general state of human health, primarily on the spread of cardiovascular diseases, diabetes, arthritis, asthma, and cancer; more than 50% of people with MD also have sleep disorders, which often lead to diseases of the respiratory organs; the risk of death from cancer in the presence of depressive disorders increases by 50%, and from heart disease by 67% [3,5].

Treatment for MD includes psychotherapy, medication, or a combination of both. Among drugs, the largest evidence base for effectiveness and safety in the

treatment of cognitive dysfunctions is provided by drugs from the classes of antidepressants, antipsychotics, and anxiolytics. Despite proven efficacy and relatively good tolerability, drugs of these groups can cause significant side effects, including dependence, withdrawal syndrome and central nervous system depression, gastrointestinal side effects and sexual disorders. The drug's safety is limited due to their anticholinergic effects, toxicity, relatively low threshold of lethal doses, psychomotor and cognitive disorders [6]. Therefore, of particular interest in the treatment of functional disorders of the nervous system and cognitive disorders, including PTSD is the search for sedative and anxiolytic drugs [7].

Medicinal products of plant origin may be safer and more affordable alternative to synthetic drugs, better tolerated by patients, with less pronounced side effects and lower risk of addiction. Plant extracts contain a set of individual constituents at varying abundance and a number of studies have shown that the overall activity of botanical extracts can result from mixtures of compounds with synergistic, additive, or antagonistic activity. Sedative and anxiolytic herbal drugs and dietary supplements available on the pharmaceutical market frequently contain one or more standardized plant extracts and interactions between constituents of these extracts due to their synergic or antagonistic nature may improve pharmacological effect of the whole preparation.

In the formulations of phytoantidepressants are mostly included *Humulus lupulus L.*, *Piper methysticum*, *Lavandula angustifolia*, *Melissa officinalis*, *Passiflora incarnate*, *Crocus sativus*, *Perforatum perforatum*, *Valeriana officinalis* and other herbs with sedative and antidepressive effects [7].

Considered that MD are often accompanied wide range of concomitant diseases, it is advisable to introduce natural adaptogens such as *Panax ginseng*, *Eleutherococcus senticosus*, *Rhaponticum carthamoides*, *Rhodiola rosea*, and *Schisandra chinensis* into the formulations of anxiolytic drugs. That allows increasing the organism's resistance to a variety of chemical, biological, and physical stressors in a nonspecific way [8].

And taken into account that such concomitant diseases as hypertension, angina pectoris, and arrhythmias often accompany MD, it is advisable to introduce cardioprotectants into the formulations of anxiolytic drugs, which allows to protect additionally the cardiovascular system from the negative consequences of stress conditions. Some medicinal plants well known to treat cardiovascular diseases are *Daucus carota*, *Nerium oleander*, *Amaranthus Viridis*, *Ginkgo biloba*, *Terminalia arjuna*, *Picrorhiza kurroa*, *Salvia miltiorrhiza*, *Tinospora cordifolia*, *Mucuna pruriens*, *Hydrocotyle asiatica*, *Bombax ceiba*, and *Andrographis paniculate* [9].

In this regard, it is advisable to develop multicomponent preparations containing standardized plant extracts with multimodal antidepressant, adaptogenic and cardioprotective activity. Taken into account that standardized extracts contain different groups of biologically active substances and have various mechanisms of pharmacological activity and combination of different medicinal plants in one dosage form may result in synergistic, additive, or antagonistic activity of mixtures of

compounds. Therefore, pharmacological studies of the multimodal action of such drugs are important, which will give a better understanding of complex biochemical processes in the human body and drug interaction.

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