Результати. За умов ГАМК-негативних конвульсій *in vivo* встановлено потужні захисні властивості дигоксину *per se* на моделях гострих пароксизмів, а також помірну антиконвульсивну дію за пентилентетразолового кіндлінгу. При цьому доведено здатність дигоксину виразно посилювати протисудомний потенціал класичних ПЕЗ, забезпечуючи максимальний захисний ефект їх субефективних доз. Встановлено також значне збільшення пулу ГАМК у мозку тварин на тлі застосування комбінації дигоксину з вальпроатом натрію. За результатами докінгу *in silico* встановлено, що дигоксин виявляє високу афінність до ГАМК-ергічних біомішеней: бензодіазепінового сайту $ГАМК_A$-рецептора, $ГАМК_A$-сайту нейростероїдів, а також ідентичну ретигабіну афінність до вольтаж-залежних калієвих каналів KCNQ2, шо доведено регулюють релізинг ГАМК.

Висновки. За сукупністю результатів, отриманих *in vivo* та *in silico*, встановлено, що ад'ювантний протисудомний потенціал дигоксину пов'язаний із наявністю ГАМК-ергічних властивостей.

PINEAPPLE WEED (*MATRICARIA DISCOIDEA* DC.) HERB EXTRACTS WITH SOPORIFIC ACTIVITY

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Introduction. Pineapple weed (*Matricaria discoidea* DC., Asteraceae) herb is an essential oil containing raw material with spasmolytic and anti-inflammatory activity, also rich in phenolics. Recently, we found a total of 44 terpenoids, 16 phenolic compounds in the aqueous-ethanolic extract of *M. discoidea* herb, and the dry extract showed a promising soporific activity [1], which can be improved by the well-known strategy – the conjugation with amino acids [2].

The aim of the study. The aim of this research was to study phytochemical composition and soporific activity of the *M. discoidea* dry extract and its amino acid preparations with potential uses in the pharmaceutical practice.

Materials and methods. The *M. discoidea* herb was harvested from wild nature during the flowering time. Its dried flowering tops was macerated with 70% aqueous ethanol and modified with amino acids (arginine (Arg), phenylalanine (Phe), β-alanine (β-Ala), glycine (Gly), valine (Val) and lysine (Lys). The content of hydroxycinnamic acids, flavonoids, and total phenolic compounds in the extracts was determined spectrophotometrically. The phenolic compounds and amino acids of the extracts were also determined with a UPLC-MS/MS. The *M. discoidea* extracts soporific activity was studied with white rats on a thiopental model.

Results. The *M. discoidea* herb extract and its amino acid preparations are brown-greenish powders with a characteristic smell. A total of 7 hydroxycinnamic acids, 2 phenolic acids, 7 flavonoids and 14 amino acids were established by UPLC-MS/MS methods. The dominant flavonoids are luteolin and its glycoside luteolin-7-O-glucoside. Hydrocinnamic acids, such as chlorogenic, 4,5-dicaffeoylquinic, 3,5-

dicaffeoylquinic and 3,4-dicaffeoylquinic acids predominated. *M. discoidea* herb extract and its amino acid preparations had a positive dose-dependent effect on sedation in rats. The addition of β-alanine, glycine, and valine in the herb extract leads to a significant increase in sleep duration, while the inclusion of arginine, phenylalanine and lysine resulted in an opposite effect.

Conclusions. The studied *M. discoidea* extracts were proven to have soporific activity in an animal model and could be used as drug-therapy supporting components in soporific medicines. However, further research is needed to implement these novel agents for therapeutic applications.

References

1. Sepp J., Koshovyi O., Jakštas V., et al. Phytochemical, pharmacological, and molecular docking study of dry extracts of *Matricaria discoidea* dc. with analgesic and soporific activities. *Biomolecules*. 2024. 14, 361.

2. Koshovyi O., Romanenko Ye., Komissarenko A. The study of the phenolic composition of the dry extract of motherwort herb and its psychotropic activity. *American Journal of Science and Technologies, "Princeton University Press"*. 2016. 1 (21). P. 1055-1059.

THE PRELIMINARY RESULTS OF THE SCREENING OF MOLYBDENUM(VI) COORDINATION COMPOUNDS FOR NEUROPROTECTIVE ACTIVITY IN HT-22 CELLS

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Introduction. Coordinative compounds of metals attract attention as biologically active substances possessing favourable safety profile and targeting the important mechanisms including those associated with neurodegeneration [1, 2]. Molybdenum complexes are among such compounds [3] characterized with less risk of neurotoxicity [4], thus their further studies are expedient.

The aim of the study. This study aimed to compare potential cytoprotective and cytotoxic properties within the previously synthetized molybdenum complexes [5, 6].

Materials and methods. The choice of the studied compounds was based on the data of the preliminary screening [5, 6]. HT-22 cells were used as a generally accepted model for studying neuronal cell death and oxidative stress. Cells viability was analyzed after preincubation with the studied compounds under standard conditions and on the model of hydrogen peroxide-induced cytotoxicity [7].

Results. As expected, cell death under the studied conditions developed by the type of apoptosis [7]. The conducted analysis allowed to establish the most active compound protecting the cells from pathological changes induced by hydrogen peroxide. The range of the active concentrations was established and assessment for the potential toxic effects for the cells at standard conditions (without cytotoxic