MeetingsPremium
MP Journal of Medical Research
Journal of poster communications · ISSN 3144-8402 (Online)
Vol. 1 · 2026-0057
OPEN ACCESS

TYPE
Poster communication

SPECIALTY
Pharmaceutical Industry

PRESENTED AT
Al X-lea Congres al Farmaciștilor din Republica Moldova, 22–23 November 2024

PUBLISHED
1 November 2026

DOI
10.5281/zenodo.23858843

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KEYWORDS
combined drug product · sensorineural hearing loss · vertigo

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POSTER COMMUNICATION · PHARMACEUTICAL INDUSTRY

New perspectives in the drug treatment of auditory and vestibular analyzer disorders

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KEY MESSAGES

1. Sensorineural hearing loss and vestibular disorders require complex multidrug pharmacotherapy.
2. The combined drug product NPP shows neuroprotective and otoprotective effects in preclinical studies.
3. NPP is safe and effective, supporting further preclinical and clinical research for auditory and vestibular disorders.

ABSTRACT

Introduction. Currently, over 400 million people worldwide suffer from hearing impairment, and this number is increasing. Sensorineural hearing loss (SNHL) clinically manifests as perceptual hearing loss and tinnitus. Peripheral vestibular analyzer disorders mostly cause vertigo cases, including benign paroxysmal positional vertigo and vestibular neuronitis. Inner ear diseases associated with hearing loss and vertigo include labyrinthitis and Ménière's disease. Combined drug products contain two or more active principles in fixed doses and are promising for treating vestibulo-cochlear diseases (1).

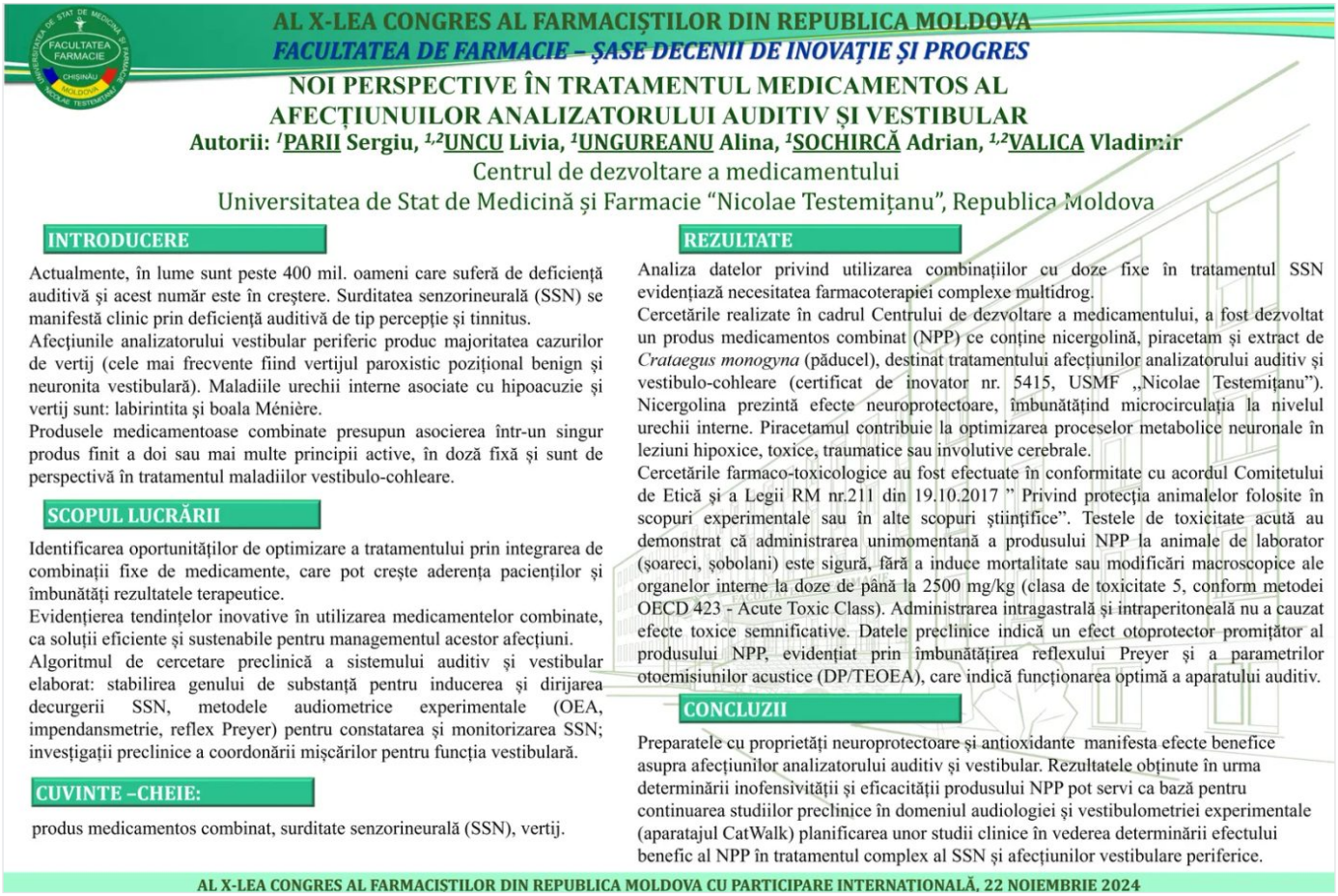
Materials and methods. The study aimed to identify opportunities to optimize treatment by integrating fixed-dose drug combinations to improve patient adherence and therapeutic outcomes. Innovative trends in combined drug use were highlighted as efficient and sustainable solutions for managing these conditions (2). A preclinical research algorithm for the auditory and vestibular system was developed, including substance selection for inducing and directing SNHL progression, experimental audiometric methods (OEA, impedance, Preyer reflex) for SNHL monitoring, and preclinical investigations of movement coordination for vestibular function.

Results. Data analysis on fixed-dose combinations in SNHL treatment highlighted the need for complex multidrug pharmacotherapy. Research at the Drug Development Center produced a combined drug product (NPP) containing nicergoline, piracetam, and Crataegus monogyna extract, aimed at treating auditory and vestibulo-cochlear disorders (innovation certificate no. 5415, USMF "Nicolae Testemițanu"). Nicergoline has neuroprotective effects improving inner ear microcirculation. Piracetam optimizes neuronal metabolic processes in hypoxic, toxic, traumatic, or involutional brain lesions. Pharmacotoxicological studies confirmed safety in laboratory animals at doses up to 2500 mg/kg (OECD 423 Acute Toxic Class 5). Intragastrial and intraperitoneal administration caused no significant toxic effects. Preclinical data indicate a promising otoprotective effect of NPP, improving Preyer reflex and acoustic otoemissions (DP/TEOEA), indicating optimal auditory apparatus function (3).

Conclusion. Neuroprotective and antioxidant drugs show beneficial effects on auditory and vestibular analyzer disorders. The safety and efficacy results of NPP support continuing preclinical audiology and vestibulometry studies (CatWalk apparatus) and planning clinical trials to determine NPP's beneficial effect in complex SNHL and peripheral vestibular disorder treatment.

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CITE THIS PUBLICATION

Parii S, Uncu L, Ungureanu A, Sochircă A, Valica V. New perspectives in the drug treatment of auditory and vestibular analyzer disorders [Poster]. MP J Med Res. 2026;1:2026-0057. doi:10.5281/zenodo.23858843

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Presented at Al X-lea Congres al Farmaciștilor din Republica Moldova, 22–23 November 2024. Republished with the agreement of the authors.

PROCESS
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