



ENHANCING THERAPEUTIC EFFICACY OF CANNABIDIOL THROUGH THE DEVELOPMENT OF ADVANCED DELIVERY SYSTEMS

Viktorija Maksimova¹, Mihail Aleksandrov^{1,2}, Elena Drakalska Sersemova²

¹ Department of Applied Pharmacy, Faculty of Medical Sciences, Goce Delcev University, Stip, North Macedonia

² AuraPharm LLC, Kavadarci, North Macedonia

³ Department of Pharmaceutical Technology, Faculty of Medical Sciences, Goce Delcev University, Stip, North Macedonia

e-mail: viktorija.maksimova@ugd.edu.mk

INTRODUCTION

Cannabidiol (CBD) has emerged as a promising non-psychoactive pharmacological effect, but it often demonstrates inconsistent efficacy in preclinical and clinical studies, largely due to its poor aqueous solubility, low bioavailability, and physicochemical instability [1].

MATERIALS AND METHODS

By reviewing different formulations as appropriate delivery systems for CBD, such as nanoparticles, liposomes, microcapsules, we have found microencapsulation as simple and economical procedure convenient for our experimental conditions. Microparticles were obtained with protein-based or polysaccharide coating (matrix) loaded with hemp seed oil and CBD using a complex coacervation method and pH-induced protein precipitation.

RESULTS

Our preliminary results indicate that the obtained microcapsules are in the size range $\approx 20\text{-}60\ \mu\text{m}$, characterized by span values ranging from 1.9 to 2.8, indicating moderate to broad distributions depending on the formulation parameters, and initially low zeta potential reflecting their low electrostatic repulsion.

CONCLUSION

Development of microcapsules as delivery systems is a promising strategy, but this procedure still requires a long optimization process to ensure the appropriate physicochemical characteristics of CBD.

REFERENCES

[1] Aleksandrov M, Maksimova V, Smilkov K, *Archives of pharmacy*, Volume 76, 1, 1-24 (2026).

Keywords: cannabidiol, delivery system, formulation, microencapsulation.