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Abstract

The Importance of Nanosystems in Antipsychotic Drugs Brain Targeting †

Maria Ferreira [1,*], Ana Cláudia Paiva-Santos [1,2], Francisco Veiga [1,2] and Patrícia C. Pires [1,2,3]

[1] Faculty of Pharmacy (FFUC-UC), University of Coimbra, Azinhaga de Santa Comba, 3000-548 Coimbra, Portugal
[2] Associated Laboratory for Green Chemistry of the Network of Chemistry and Technology (LAQV REQUIMTE), Group of Pharmaceutical Technology, Faculty of Pharmacy, University of Coimbra, 3000-548 Coimbra, Portugal
[3] Health Sciences Research Centre (CICS-UBI), University of Beira Interior, Av. Infante D. Henrique, 6200-506 Covilhã, Portugal
* Correspondence: mariadanielaferreira98@gmail.com
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Abstract: Orally administered antipsychotic drugs are the first line of treatment in the management of psychotic disorders that affect millions of people globally and have a tremendous impact on patient and family lives, such as schizophrenia and bipolar disorder. Nevertheless, adverse drug reactions hinder clinical outcomes, resulting in patient non-compliance. The design and implementation of adequate formulation strategies for enhancing drug delivery and targeting to the brain has been a significant challenge, mainly due to the restrictive properties of the blood–brain barrier. However, recent pharmacokinetic and pharmacodynamic in vivo assays confirmed that there is evidence of the advantage of the intranasal route when compared to oral and intravenous administration, as it allows the possibility of direct nose-to-brain transport via neuronal olfactory and trigeminal pathways, reducing systemic side effects, and maximizing therapeutic outcomes. In addition, the formulation of polymeric and solid lipid nanoparticles, nanostructured lipid carriers, nanoemulsions, nanoemulgels, nanosuspensions, niosomes, *Spanlastics* and polymeric mixed micelles is a promising approach since they have a reduced particle size, ideal for nose-to-brain delivery, stability, high encapsulation efficiency, enhanced drug solubility, and drug protection from enzymatic degradation. Nevertheless, it is essential to continue research in this field, conducting more long-term studies with greater uniformity so that the true potential of these formulations can be assessed and a transposition into the pharmaceutical industry is someday possible.

Keywords: antipsychotics; bipolar disorder; intranasal; nanoparticles; nanosystems; schizophrenia

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