UNIVERSIDADE FEDERAL DE CIÊNCIAS DA SAÚDE DE PORTO ALEGRE
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AVALIAÇÃO DE NANOPARTÍCULAS DE SÍLICA COMO SISTEMAS DE *DRUG DELIVERY* PARA O SISTEMA NERVOSO CENTRAL

PORTO ALEGRE
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Trabalho de Conclusão de Curso de graduação apresentado ao curso de Química Medicinal da Fundação Universidade Federal de Ciências da Saúde de Porto Alegre, como requisito parcial para a obtenção do grau de Bacharel em Química Medicinal.

Orientadora: Profª. Drª. Tanira A. S. Aguirre
Co-orientadora: Drª. Jussânia de A. Gnoatto

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Banca Examinadora

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Profª. Drª. Tanira Alessandra Silveira Aguirre

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Profª. Drª. Monique Deon

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Profª. Drª. Helena Maria Tannhauser Barros

PREÂMBULO

O presente trabalho de conclusão de curso será apresentado no formato de artigo científico. A apresentação neste formato está prevista no Art. 4º da Resolução Nº 11/2020/CONSEPE, de 23 de janeiro de 2020, que regulamenta os trabalhos de conclusão do curso de Bacharelado em Química Medicinal. Segundo o Art. 4º, "Os resultados oriundos da pesquisa do TCC serão escritos na forma de artigo científico ou monografia, à critério do professor orientador do TCC.".

RESUMO

Nos últimos anos, as nanopartículas de sílica ($NPSiO_2$) têm sido amplamente estudadas como sistema de liberação de fármacos devido às suas propriedades favoráveis para aplicação na nanomedicina. Nesse contexto, o desenvolvimento de sistemas baseados em sílica específicos para entrega de fármacos para o sistema nervoso central tem sido investigado objetivando tratamento de distúrbios associados ao sistema nervoso central, tais como os tumores cerebrais, referidos glioma, neuroblastoma e glioblastoma, além das doenças de Alzheimer e Parkinson, dentre outros. A partir dessa perspectiva, o presente trabalho de revisão buscou avaliar as características químicas e físicas, como funcionalização da superfície e tamanho e carga superficial, das $NPSiO_2$ empregadas para o tratamento dos distúrbios neurológicos e associar com as propriedades biológicas observadas, bem como sumarizar os principais aspectos relacionados à produção e caracterização das $NPSiO_2$.

Palavras-chave: nanopartículas de sílica; entrega controlada de fármacos; sistema nervoso central; distúrbios neurológicos.

ABSTRACT

In recent years, silica nanoparticles ($NPSiO_2$) have been extensively studied as a drug delivery system due to their favorable properties for application in nanomedicine. In this context, the development of silica-based systems for drug delivery to the central nervous system has been investigated to treat disorders associated with the central nervous system, such as brain tumors including gliomas, neuroblastomas, and glioblastomas, as well as Alzheimer's and Parkinson's diseases, among others. From this perspective, the present review aimed to evaluate the chemical and physical characteristics of $NPSiO_2$, such as surface functionalization, size, and surface charge, used for the treatment of neurological disorders and to associate them with biological outcomes. Additionally, this review aimed to summarize the main aspects related to the production and characterization of $NPSiO_2$.

Keywords: silica nanoparticles; drug delivery; central nervous system; neurological disorders.

SUMÁRIO

1. APRESENTAÇÃO

O manuscrito do referido trabalho de conclusão de curso foi publicado na revista científica Química Nova sob o título "NANOPARTÍCULAS DE SÍLICA ($NPSiO_2$) UTILIZADAS PARA O TRATAMENTO DE DISTÚRBIOS ASSOCIADOS AO SISTEMA NERVOSO CENTRAL (SNC)", sendo os direitos de reprodução reservados ao periódico. Por este motivo, as páginas 10 a 49 foram suprimidas desta versão. O trabalho completo pode ser acessado através do DOI: http://dx.doi.org/10.21577/0100-4042.20230015.

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