Commentary
Volume 12:6, 2022

Journal of Bioengineering & Biomedical Science

ISSN: 2155-9538 Open Access

Clickable Biomaterials for Neuroinflammation Modulation

Rahamim Seliktar*

Department of Biomedical Engineering, Drexel University, Philadelphia, USA

Introduction

When compared to the limitations of traditional routes, the respiratory route of administration has garnered significant attention due to its rapid and non-invasive characteristics. To treat both local and systemic diseases, respiratory delivery can bypass the physiological barrier. A scientometric analysis and review were used to investigate the role of respiratory delivery in local and systemic therapy. From 1998 to 2020, the literature data obtained from the Web of Science Core Collection database revealed an increasing global trend toward respiratory delivery. According to keyword analysis, nasal and pulmonary drug delivery are the most researched topics in respiratory delivery. According to the findings of a scientometric analysis, the research hotspots were primarily therapy for central nervous system (CNS) disorders, tracheal and bronchial or lung diseases and systemic diseases (diabetes and COVID-19) [1].

Description

Non-invasive drug delivery refers to painless drug delivery methods that provide alternative routes for therapeutic delivery via oral, nasal, pulmonary, ocular, or rectal routes. Oral administration has been the most widely used method of disease treatment. However, some barriers, such as the BBB and pulmonary barriers, have an impact on drug delivery to target sites. Because the BBB is a complex anatomical and physiological barrier that selectively restricts the entry of substances into the brain, effectively transporting drugs to the brain is a significant challenge. Similarly, three significant barriers exist during pulmonary drug delivery. Mucociliary clearance is primarily a mechanical barrier in the upper respiratory tract. Protein and peptide degradation is controlled by enzyme chemical barriers such as peptidases and proteases, while alveolar macrophage immunological barriers limit penetration [2].

The scientometric analysis is a new method for analysing literature or hotspots. It is widely used in scientific production and research trends across a wide range of disciplines and engineering fields. Scholars use scientometric analysis for a variety of purposes, including identifying emerging trends in journal development and investigating the knowledge structure of specific fields in existing literature. By strictly making sense of large volumes of unstructured data, scientific analysis deciphers and maps mature fields' accumulated scientific knowledge and evolutionary nuances. As a result, scientometric research can help to advance the field in novel and meaningful ways [3].

Several articles on pulmonary and nasal drug delivery in respiratory delivery have appeared in the last two decades, according to the results of the keywords frequency analysis. According to the findings of keyword co-occurrence analysis, respiratory delivery has been widely used to treat a variety of diseases. This trend could be attributed to respiratory administration's superiority over traditional drug administration (i.e., oral or intravenous administration). Nasal drug delivery, for example, has the advantages of non-invasiveness, rapid onset and small dose, whereas pulmonary drug delivery has the advantages of rapid drug absorption, elimination of first-pass metabolism and fewer adverse reactions. These two drug delivery routes can have beneficial curative effects both locally and systemically.

Periodontitis, motor vehicle accidents, tumours and genetic factors can all cause craniofacial defects, including alveolar bone defects. Periodontitis is the sixth most common disease in the world and the leading cause of tooth loss, followed by caries and trauma. The dilemma of current clinical treatments for periodontitis is that they cannot repair alveolar bone destruction while also restoring the functionality of periodontally involved teeth. Furthermore, the shape and size of the osseous defects strongly influence the treatment case selection, such as guided tissue generation and bone graft. Furthermore, restoring oral cavity function with a dental implant in severely resorbed alveolar bone may be difficult. For bone, several approaches have been used.

The bioink is an important component of 3D bioprinting because of the effect it has on the outcome of tissue engineering technology. Bioink is a cell formulation that may include biomaterials and biologically active components that are suitable for processing by an automated biofabrication technology. The use of bioinks allows researchers to investigate the effects of geometry and spatial organisation on cell behaviour and function in vitro, which can then be translated into in vivo models for use in regenerative dentistry. In comparison to the traditional method of seeding cells on scaffolds, cell printing technology is now the preferred choice for a new biofabrication approach. Living cells can now be incorporated into bioprinted scaffolds using three-dimensional bioprinting technique [4,5].

Conclusion

Two independent reviewers conducted the initial screening of the identified studies based on the information in the titles and abstracts. In addition, the full text of potentially eligible studies was obtained for further screening based on inclusion and exclusion criteria. Any disagreements between reviewers on study selection were resolved through discussion by a third reviewer. The following criteria were used to define the inclusion criteria for the included studies: Participant/Population: 3D-bioprinted cell-laden construct; Concept: intervention to regenerate dental tissue using bioink containing living cells or in combination with biomaterial and/or growth factors prior to or during printing; Context: application of tissue-engineered 3D bioprinting in the dental field. However, studies that were case reports, review papers, or conference abstracts were excluded. Articles.

Acknowledgement

None.

Conflict of Interest

There are no conflicts of interest by author.

References

1. Richters, Anke, Katja KH Aben and Lambertus ALM Kiemeney. "The global burden of urinary bladder cancer: An update." *World J Urol* 38 (2020): 1895-1904.

***Address for Correspondence:** Rahamim Seliktar, Department of Biomedical Engineering, Drexel University, Philadelphia, USA; E-mail: seliktarrahamim25@gmail.com*

Date of Submission: 29 May, 2022, Manuscript No. jbbs-22-80134; **Editor Assigned:** 01 June, 2022, PreQC No. P-80134; **Reviewed:** 10 June, 2022, QC No. Q-80134; **Revised:** 15 June, 2022, Manuscript No. R-80134; **Published:** 22 June, 2022, DOI: 10.37421/2155-9538.2022.12.307

2. Siegel, Rebecca L., Kimberly D. Miller and Ahmedin Jemal. "Cancer statistics, 2019." *CA Cancer J Clin* 69 (2019): 7-34.

3. Lenis, Andrew T., Patrick M. Lec and Karim Chamie. "Bladder cancer: A review." *Jama* 324 (2020): 1980-1991.

4. Wang, Shunde, Chengguo Ge and Junyong Zhang. "Cardiovascular mortality risk in patients with bladder cancer: A population-based study." *J Cardiovasc Dev Dis* 9 (2022): 255.

5. Austin, Peter C. and Jason P. Fine. "Practical recommendations for reporting f ine-g ray model analyses for competing risk data." *Stat Med* 36 (2017): 4391-4400.

How to cite this article: Seliktar, Rahamim. "Clickable Biomaterials for Neuroinflammation Modulation." J Bioengineer & Biomedical Sci 12 (2022): 307.