Levodopa as a Treatment for Parkinson's Disease

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Introduction

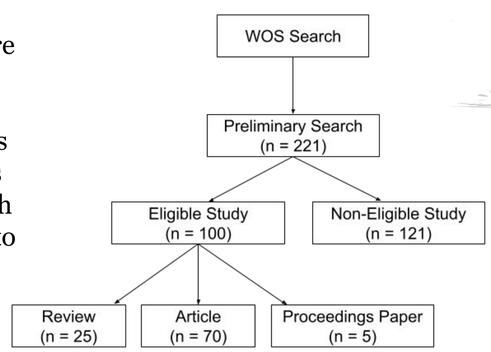
Parkinson's disease (PD) is a complex neurological disorder that causes progressive degeneration of dopaminergic neurons. These neurons produce the neurotransmitter, dopamine, which facilitates movement. There is currently no cure for PD, but treatments such as levodopa is widely used where the drug is converted into dopamine. However, researchers are still studying the effects of levodopa, since it causes complications like dyskinesia. Developing a more advantageous version of levodopa is crucial to better manage PD symptoms.

Objectives

There are 2 objectives for our study:
1. To explore the popularity of levodopa research over the last 30 years
2. To understand how effective levodopa is as a treatment

Methods

Information related to the top 100 most cited articles was collected using the Web of Science database. Articles were filtered out using keywords such as "levodopa" and "treatment." From there, we selected 100 eligible studies out of 221 articles. Data analysis was performed using Bibliometrix through the software R-Studio. It allowed us to create figures and form complex inferences about certain trends regarding levodopa research.



Results

Trending topics from the top 100 most cited articles were collected. Levodopa was the most popular topic among this list (n = 17). Basal ganglia was the second most popular topic (n = 13) and then, double-blind (n = 12). This shows that levodopa research has increased prominently within the 30-year duration.

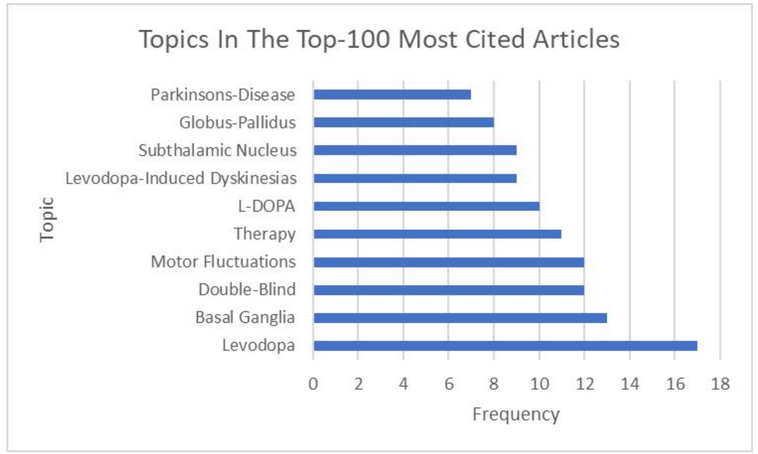


Figure 1.

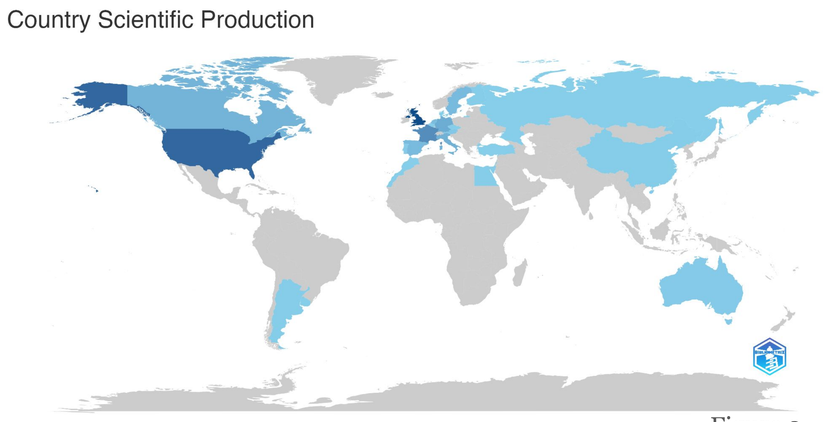


Figure 2.

The top 100 most cited articles came primarily from three countries. The United Kingdom has the greatest amount of articles published (n = 170), followed by the United States of America (n = 133), and France (n = 82). This indicates that developed countries have emphasized on levodopa research compared to developing countries.

Discussion

From 1991 to 2021, the growth of levodopa for PD treatment demonstrates the need for more neurodegenerative research. However, by measuring the top-100 most cited articles, we cannot determine that most cited means the content itself is good quality. It is possible that articles may be cited numerous times due to negative reasons. Levodopa is a highly popular treatment until now, but its long-term side effects demand scrutiny. With 18% of our selected articles addressing dyskinesia from levodopa, it shows that the drug has benefits and drawbacks, so it needs more research to produce improved outcomes. The efficacy of the drug currently seems mixed, as it depends on individual responses to levodopa, either being positive or negative. Levodopa research is also only prominent in developed countries where resources are ample, but limited to certain demographics.

Conclusion

Levodopa remains a popular and effective treatment, but more research is encouraged to alleviate its potential long-term complications. Analysis of the top 100 most cited papers concerning levodopa research has fueled the need for new treatments. More research should be conducted to prevent complications such as levodopa-induced dyskinesias. Additionally, it is essential for levodopa research to expand in developing countries to have better education about PD medication globally. Funding and exploration in these areas will not only create a push for a cure, but also help individuals reclaim their independence.

References

1. Web of Science
2. Bibliometrix
3. R-Studio Software