

Gabapentin: Proof Science is Always Evolving

Scientific Example

The concept here is that science is forever evolving. New discoveries in the scientific community both increase understanding of how things work and can change our understanding of things entirely. Notably, what is being taught today is drawn from discoveries that have been hypothesized, tested, measured, and replicated. It is possible that tomorrow's discovery can change what we present as "fact" now. Further, as these discoveries are presented and found to be replicable, it compounds to many new hypotheses. Science is like an ecosystem where each discipline is a living and breathing organism: the discoveries in one area interact with other disciplines to grow the entire ecosystem.

Nature of Science Connection

Gabapentin is a medication that was initially released to be used in conjunction with or as a replacement for other antiepileptics for better efficacy (Baranowska 2024). As science evolved and literature showed a greater understanding of how specific systems in the human body work, scientists sought to discover other uses for medication. Gabapentin, a derivative of GABA (γ -aminobutyric acid), seen below, is able to access the central nervous system (Goa 2024). Using scientific discoveries, scientists were able to explore using gabapentin as a treatment option outside of its' initial use. Now gabapentin is prescribed as a frontline choice for neuropathic pain as well as now having several off-label uses (Wallach 2018).

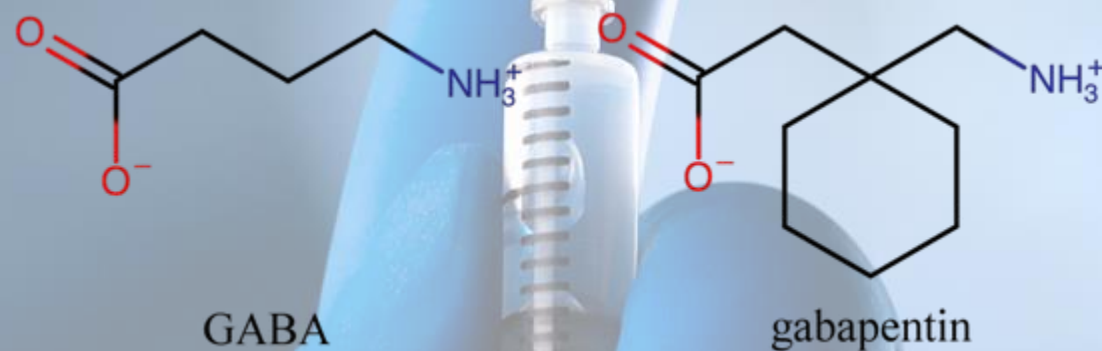


Figure 1. A visual comparison between GABA and gabapentin highlighting their similarities. Baranowska, J. 2024. *Exploring Various Crystal and Molecular Structures of Gabapentin*.

Why This Matters

Sometimes in science it is crucial to look backwards before you can move forward. Not every problem demands a new solution. It is also worth noting, just because something has already been studied and published; that does not mean that one thing is finished. There is always room for growth and further understanding in science.

Learning or Classroom Use

In a classroom setting, I can see this case card being used as a discussion prompt. After presenting the information about gabapentin being used initially for a specific treatment type and then based on its' biological make-up being studied further to be used for many other off-label uses. Another example that could be pulled on is sildenafil (commonly known by its name brand Viagra) and its initial intended use.

References

- Baranowska, J. & Szeleszczuk, Ł. (2024). Exploring Various Crystal and Molecular Structures of Gabapentin—A Review. *Crystals*, 14(3), 257. <https://doi.org/10.3390/cryst14030257>
- Goa, K.L. & Sorkin, E.M. (2024). Gabapentin. *Drugs*, 46, 409–427. <https://doi.org/10.2165/00003495-199346030-00007>
- Wallach, J.D. & Ross, J.S. (2018). Gabapentin Approvals, Off-Label Use, and Lessons for Postmarketing Evaluation Efforts. *JAMA*, 8(319), 776-778. doi:10.1001/jama.2017.21897

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