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A Commentary on "Chitosan, a Natural Polymer, is an Excellent Sustained-Release Carrier for Amide Local Anesthetics" [Letter]

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Dear editor

We are pleased to express my keen interest in the comprehensive and insightful review article entitled "Chitosan, a Natural Polymer, is an Excellent Sustained-Release Carrier for Amide Local Anesthetics" by Yun-Mei Yu et al[1] published in Journal of Pain Research. While this article provides an in-depth analysis of the potential of chitosan as a sustained-release carrier for amide-based local anesthetics, emphasizing its biocompatibility, biodegradability, and drug affinity, we found several areas that could be further reviewed and expanded upon.

Firstly, the impact of chitosan's degree of deacetylation and molecular weight on drug delivery properties is not fully discussed. For example, Vishwapriya Saravanan et al showed that chitosan with a higher degree of deacetylation performed well in terms of solubility and bioactivity, but had variable release characteristics.[2] The review could have discussed in more detail around how these variables affect the sustained release characteristics of amide local anesthetics when chitosan is used as a carrier.

Secondly, while the review hints at reduced drug administration frequency with chitosan-based formulations, scalability and reproducibility challenges are under-explored. Comparative analyses with other commercial products like liposomal bupivacaine could provide a clearer picture of chitosan's strengths and limitations. For example, a study by Matylda Szewczyk-Łagodzińska et al identified manufacturing complexities and batch-to-batch inconsistencies common to polymeric pharmaceutical delivery systems, which are equally relevant for chitosan formulations.[3]

Third, although the review acknowledges the anti-inflammatory properties of amide-based local anesthetics, it does not delve into the potential synergistic effects of chitosan with these drugs. Recent studies by Wang et al have shown that local anesthetics modulate the inflammatory response, and exploring how chitosan may enhance or modify this effect would be a valuable addition to the review.[4]

Lastly, a detailed cost analysis comparing chitosan-based formulations to traditional local anesthetics is missing. Economic evaluations, such as the cost-effectiveness analysis of Paczkowska-Walendowska and Cielecka-Piontek on anti-inflammatory drug delivery systems, could provide valuable context for the potential use of chitosan in clinical practice.[5]

In conclusion, Yu et al's review offers a solid foundation, but addressing the above issues would provide a more comprehensive assessment of chitosan's potential. We look forward to seeing these aspects explored in future updates.

Disclosure

The author(s) report no conflicts of interest in this communication.

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