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Retraction: Investigation of the biological activity, mechanical properties and wound healing application of a novel scaffold based on lignin–agarose hydrogel and silk fibroin embedded zinc chromite nanoparticles

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 Retraction of 'Investigation of the biological activity, mechanical properties and wound healing application of a novel scaffold based on lignin–agarose hydrogel and silk fibroin embedded zinc chromite nanoparticles' by Reza Eivazzadeh-Keihan et al., *RSC Adv.*, 2021, 11, 17914–17923, <https://doi.org/10.1039/D1RA01300A>.

The Royal Society of Chemistry hereby wholly retracts this *RSC Advances* article due to concerns with the reliability of the data.

There are concerns with the MTT plate image in Fig. 4B, the wound healing images in Fig. 5B and the hemolysis plate image in Fig. 6B, with these images being duplicated in other articles by the same authors.^{1–3}

The authors' response and data have been reviewed by an independent expert who has deemed them unsatisfactory.

Given the significance of these concerns, the Editor has lost confidence that the findings presented in this paper are reliable.

This retraction supersedes the information provided in the Expression of Concern related to this article.

Ahmed Esmail Shalan stated their role was limited to revising, editing and helping in the publishing process.

Farzane Khalili stated their role was limited to the chemistry-related aspects of the study, and had no role in the biological experiments or analyses.

Fateme Radinekiyan stated their role was limited exclusively to the chemistry section of the paper and had no involvement in the biological part of this study.

Hamid Madanchi states that his contribution to this work was limited to providing the laboratory bench, consumable materials, cell lines, and microbial strains. He does not agree with the retraction. He states that the MTT and hemolysis images associated with this article (Fig. 4B and 6B) were originally published in this *RSC Advances* paper and were later reused in other articles published subsequently, which have since been retracted. He further notes that all original raw images of the mouse and wound experiments, along with complete supporting documentation, were provided to the journal.

The authors were informed about the retraction of the article. Ahmed Esmail Shalan, Farzane Khalili and Fateme Radinekiyan have agreed with the retraction. Hamid Madanchi, Ali Maleki and Reza Eivazzadeh-Keihan have not agreed with the decision, the other authors have not indicated whether they agree with the decision to retract.

Signed: Ahmed Esmail Shalan, Farzane Khalili and Fateme Radinekiyan

Date: 30th January 2026

Retraction endorsed by Laura Fisher, Executive Editor, *RSC Advances*

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References

- 1.R. Eivazzadeh-Keihan, F. Khalili, N. Khosropour, H. A. M. Aliabadi, F. Radinekiyan, S. Sukhtezari, A. Maleki, H. Madanchi, M. R. Hamblin, M. Mahdavi, S. M. A. Haramshahi, A. E. Shalan and S. Lanceros-Méndez, *ACS Appl. Mater. & Interfaces*, 2021, **13**, 33840–33849.
- 2.R. Eivazzadeh-Keihan, F. Alimirzaloo, H. Aghamirza Moghim Aliabadi, E. Bahojb Noruzi, A. R. Akbarzadeh, A. Maleki, H. Madanchi and M. Mahdavi, *Sci. Rep.*, 2022, **12**, 6205, DOI: [10.1038/s41598-022-10212-0](https://doi.org/10.1038/s41598-022-10212-0).
- 3.F. Ganjali, R. Eivazzadeh-Keihan, H. Aghamirza Moghim Aliabadi, A. Maleki, S. Pouri, R. Ahangari Cohan, S. M. Hashemi and M. Mahdavi, *J. Inorg. Organomet. Polym. Mater.*, 2022, **32**, 4057-4069, DOI: [10.1007/s10904-022-02410-0](https://doi.org/10.1007/s10904-022-02410-0).

