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EDITED AND REVIEWED BY

Yu Luo,
Shanghai University of Engineering
Sciences, China

*CORRESPONDENCE

Kewei Jiang,
✉ dr_jiangkewei@163.com

[†]These authors have contributed equally
to this work

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Corrigendum: PPy@Fe₃O₄ nanoparticles inhibit the proliferation and metastasis of CRC via suppressing the NF-κB signaling pathway and promoting ferroptosis

Zhilong Yu^{1†}, Shanshi Tong^{2†}, Chenyi Wang¹, Zizhen Wu¹,
Yingjiang Ye¹, Shan Wang¹ and Kewei Jiang^{1*}

¹Department of Gastroenterological Surgery, Laboratory of Surgical Oncology, Beijing Key Laboratory of Colorectal Cancer Diagnosis and Treatment Research, Peking University People's Hospital, Beijing, China, ²State Key Laboratory of Oncogenes and Related Genes, Shanghai Cancer Institute, Renji Hospital, School of Medicine, Shanghai Jiao Tong University, Shanghai, China

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colorectal cancer, nanoparticles, metastasis, NF-κB, ferroptosis

A Corrigendum on

PPy@Fe₃O₄ nanoparticles inhibit the proliferation and metastasis of CRC
via suppressing the NF-κB signaling pathway and promoting ferroptosis

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In the published article, there was an error in [Figures 2E, 5](#) as published. Modifications to UV absorption spectra in [Figure 2E](#) and NF-κB related protein typographical errors in the WB experiment in [Figure 5](#) were made after a recheck of the figures, but not included in the final article. The corrected [Figures 2, 5](#) and their captions appear below.

Additionally, the statistical method in the “Statistics” section and “PPy@Fe₃O₄ NPs inhibited EMT via the NF-κB signaling pathway” section were incorrect due to translation error and clerical error.

A correction has been made to **Materials and methods** section, subsection *Statistics*. A correction has also been made to the **Results** section, subsection *PPy@Fe₃O₄ NPs inhibited EMT via the NF-κB signaling pathway*, Paragraph 1. These sentences previously stated, respectively:

“Based on experiments performed in triplicate for cell proliferation, migration, and invasion, all data are presented as mean ± SEM. In the animal study of nude mice, the data are presented as mean ± SEM of 5 mice. Statistical analyses were performed with the χ² test or the Student's t-test (two-tailed unpaired). All the data were analyzed using SPSS 22.0 software and *p* < 0.05 was considered significant.”

“There was an increase in the levels of IKKα and IKKβ in DLD1, as well as a decrease in the amounts of IκBα after treatment with H₂O₂. P65 levels did not change significantly, but phospho-p65 expression increased. We discovered that the expression of phosphorylated (p) p65, IKKα, IKKβ, and IκBα, which are essential for activating the NF-κB signaling pathway, were downregulated by NPs with H₂O in DLD1 cells.”

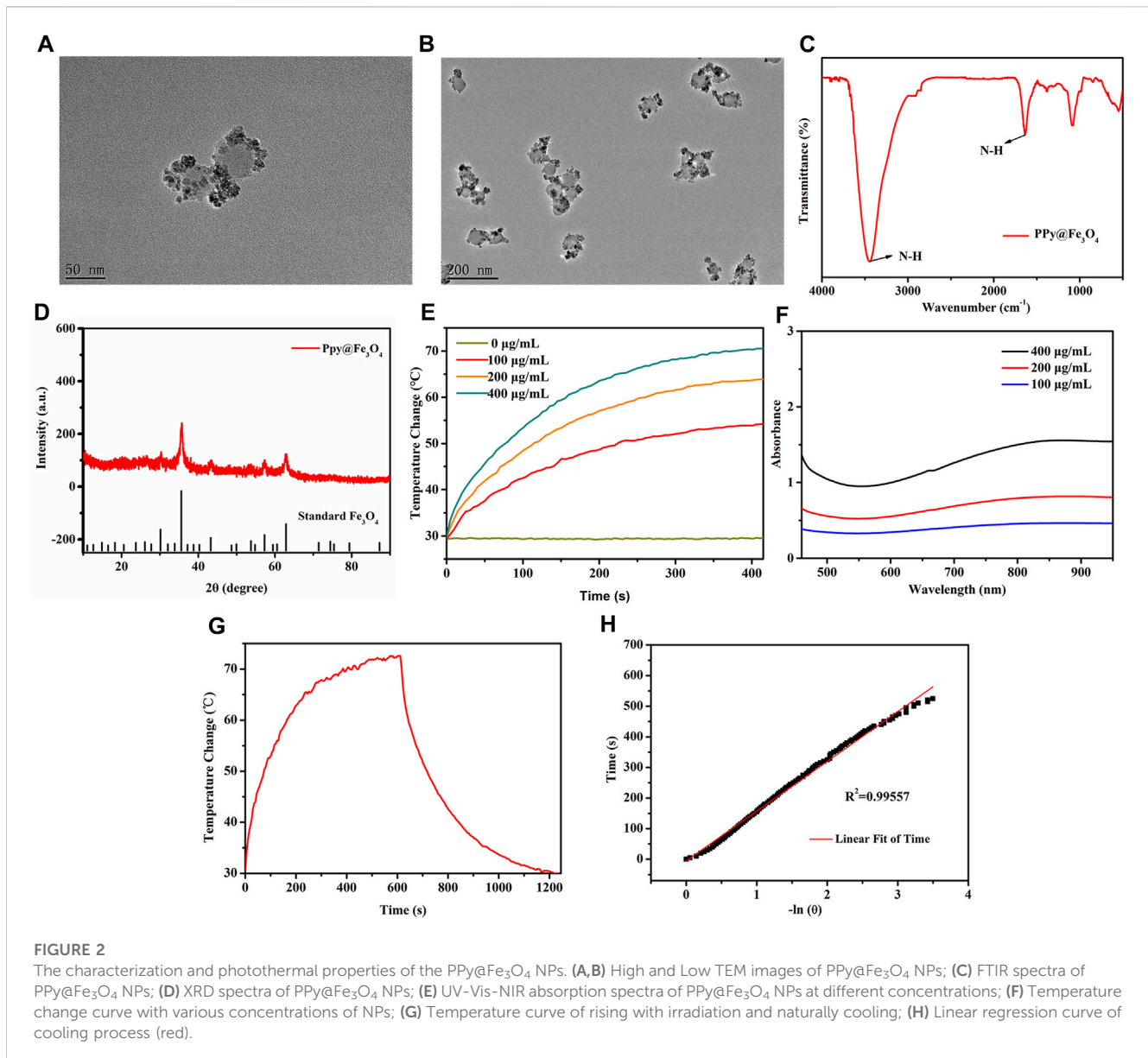


FIGURE 2

The characterization and photothermal properties of the PPy@Fe₃O₄ NPs. (A,B) High and Low TEM images of PPy@Fe₃O₄ NPs; (C) FTIR spectra of PPy@Fe₃O₄ NPs; (D) XRD spectra of PPy@Fe₃O₄ NPs; (E) UV-Vis-NIR absorption spectra of PPy@Fe₃O₄ NPs at different concentrations; (F) Temperature change curve with various concentrations of NPs; (G) Temperature curve of rising with irradiation and naturally cooling; (H) Linear regression curve of cooling process (red).

The corrected sentences appear below:

“All data are presented as mean ± SD. Statistical analyses were performed with the χ^2 test or the Student’s t-test (two-tailed unpaired). All the data were analyzed using Origin and Graphpad. Moreover, $p < 0.05$ is considered statistically significant.”

“There was a decrease in the levels of p-IKK α and p-IKK β in DLD1, as well as an increase in the amounts of p-IkBa after treatment with NPs and H₂O₂. P65 levels did not change significantly, but phospho-p65 expression decreased. We discovered that the expression of phosphorylated (p)p65, p-IKK α , p-IKK β , and IkBa, which are essential for activating the NF- κ B signaling pathway, were downregulated by NPs with H₂O₂ in DLD1 cells.”

There was also an error in the **Funding** statement. National Nature Science Foundation of China (No. 81871962) has expired and ceased. The correct **Funding** statement appears below.

“This study was supported by the National Scientific Center Project (No. 62088101) and the Industry-University-Research Innovation Fund in Ministry of Education of the People’s Republic of China (No. 2018A01013).”

The authors apologize for these errors and state that this does not change the scientific conclusions of the article in any way. The original article has been updated.

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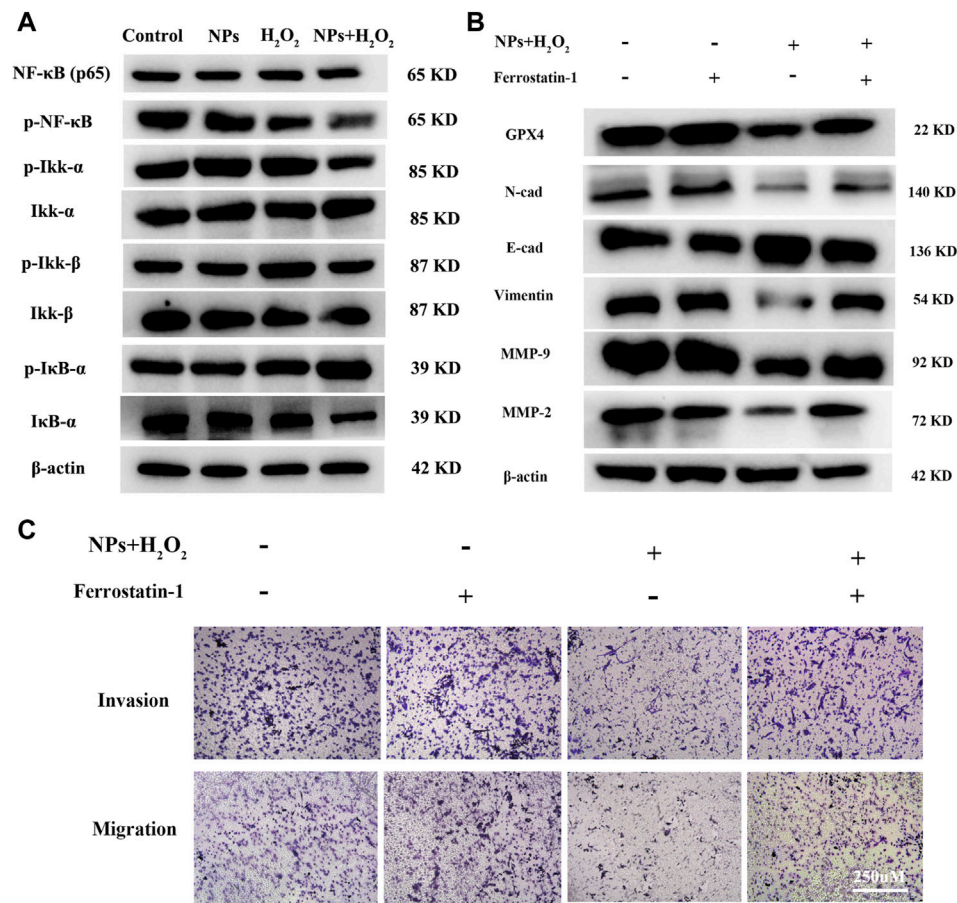


FIGURE 5

PPy@Fe₃O₄ NPs suppress CRC cells metastasis by promoting cell ferroptosis and inhibiting NF-κB signaling pathway. **(A)** Western blot. Colorectal cancer cell line DLD1 was treated with various groups (Control, H₂O₂, NPs and NPs + H₂O₂), and then subjected to Western blot analysis of the key proteins of the NF-KB signaling pathway (Ikk-β, p-Ikk-β, ikk-α, p-Ikk-α, NF-κβ, p-NF-κβ, IκB-α and p-IκB-α). **(B)** Effects of the ferroptosis inhibitor Ferrostatin-1 on PPy@Fe₃O₄ NPs-induced metastasis-related proteins expression. **(C)** Transwell showed that PPy@Fe₃O₄ NPs-induced cell migration and invasion were abolished after addition of the ferroptosis inhibitor Ferrostatin-1 in CRC cell.