

Engineered baicalein-decorated zinc phosphates for synergistic alleviation of inflammatory bowel disease by repairing mucosal barrier and relieving oxidative stress

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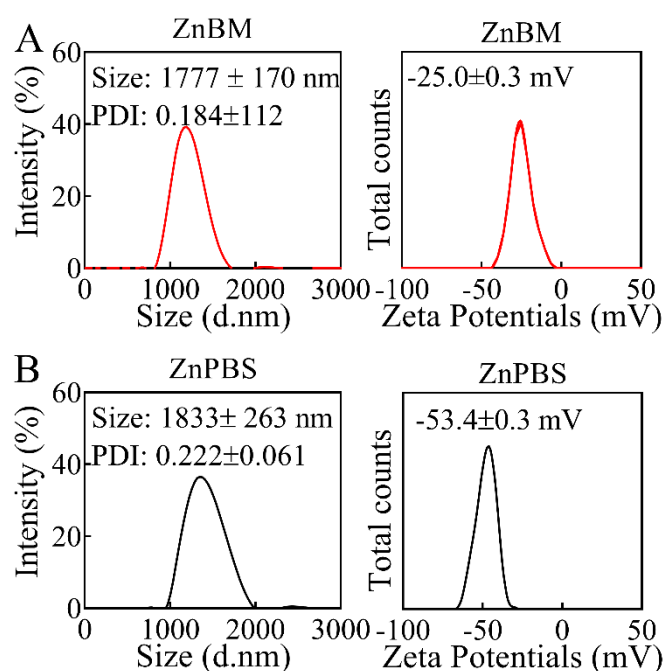


Figure S1. Size, polydispersity (PDI) and Zeta potentials distribution of ZnBM (A) and ZnPBS (B) by DLS.

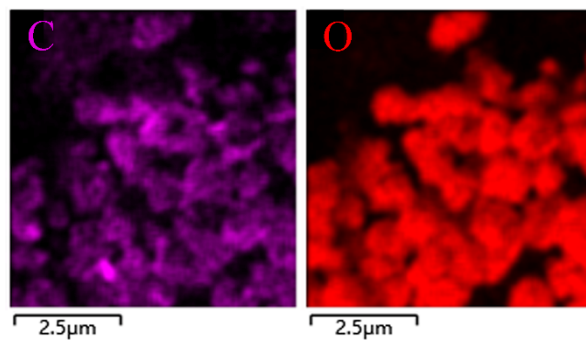


Figure S2. EDS elemental mapping of ZnBM (C and O)

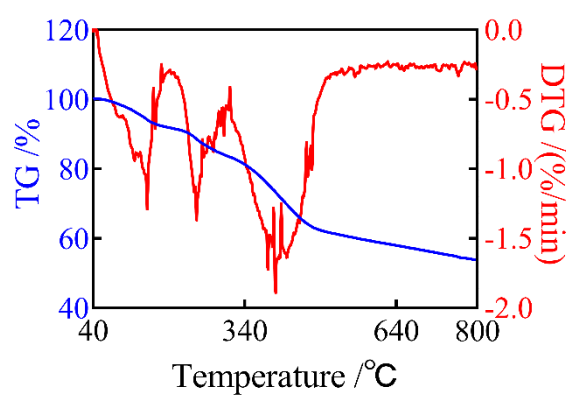


Figure S3. TG/DTG curves of ZnBM

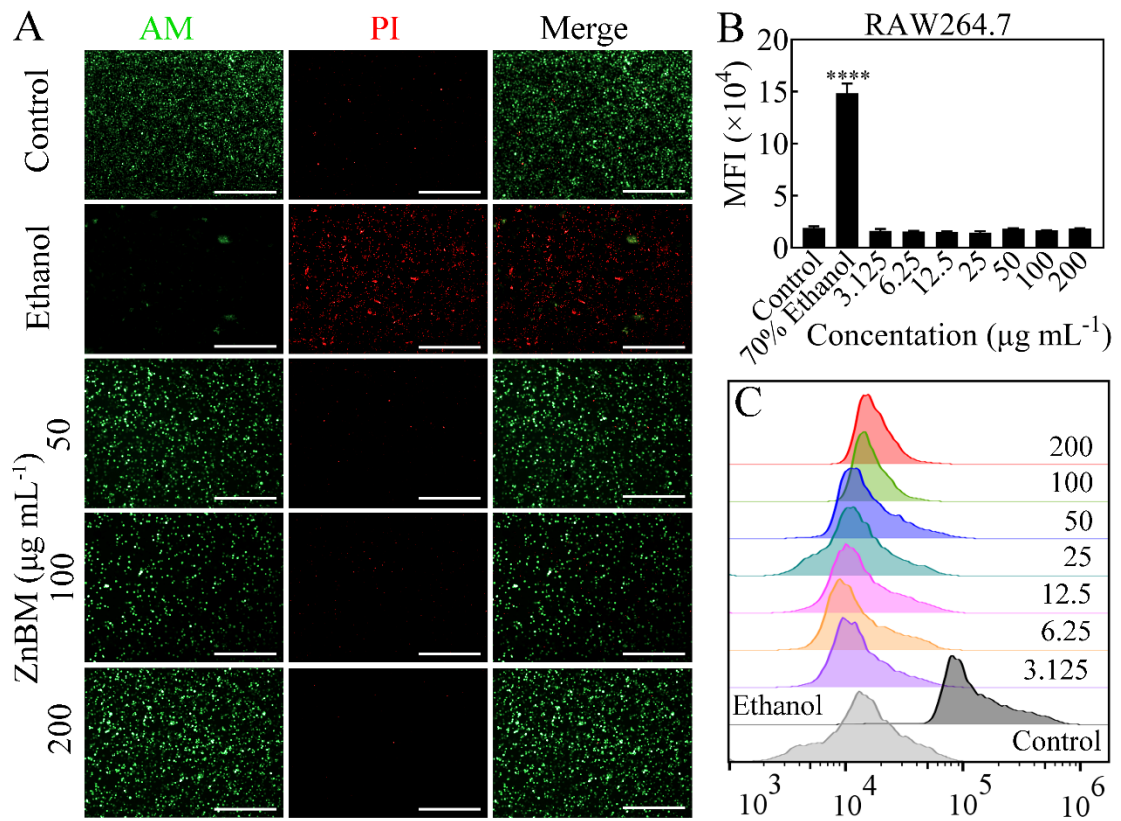


Figure S4. Cytotoxicity of ZnBM to RAW264.7 cells. (A) Representative live/dead images of RAW264.7 after treating with ethanol or ZnBM for 24 h. (B) Median fluorescence intensity (MFI) of PI-positive RAW264.7 was analyzed by flow cytometry after treatment with ethanol or different concentrations of ZnBM for 24 h, and (C) the corresponding flow histogram. Data are shown as mean \pm SD (n=3); **** P < 0.0001, compared with Control group.

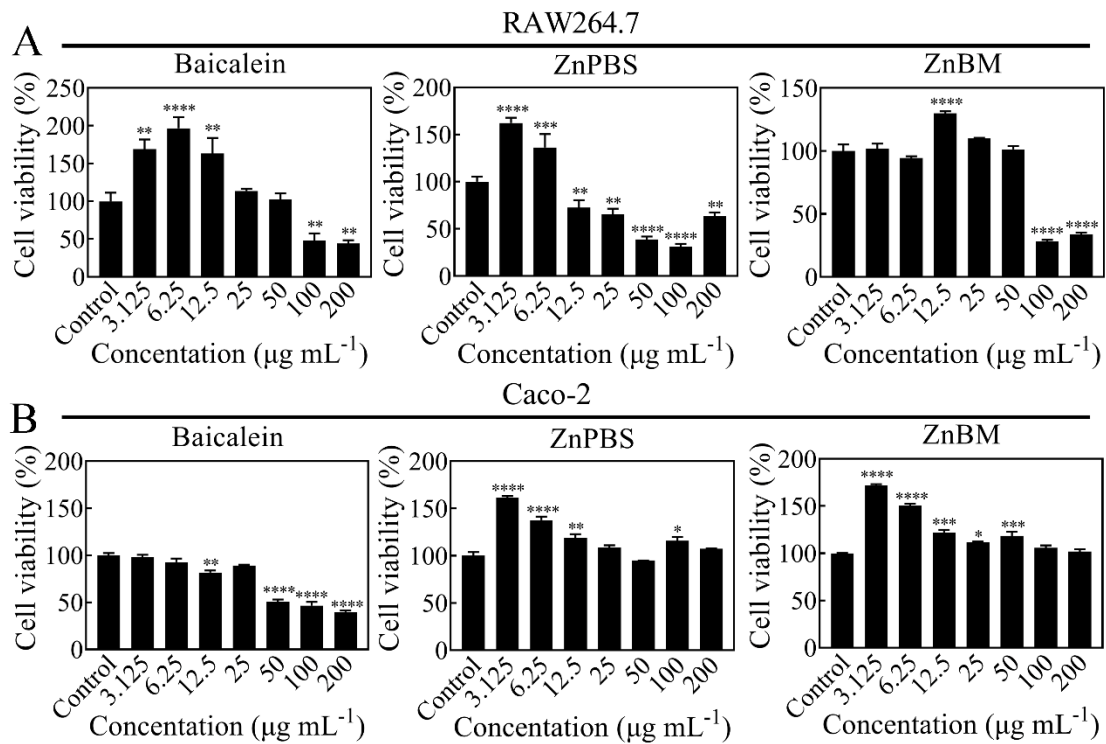


Figure S5. Cytotoxicity of ZnBM to RAW264.7 and Caco-2 cells. The cell viability of RAW264.7 (D) and Caco-2 (E) cells after 48 h of co-incubation with different concentrations of ZnBM, the untreated cells was set as a Control group. Data are shown as mean \pm SD ($n=3$); * $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$, **** $P < 0.0001$, compared with Control group.

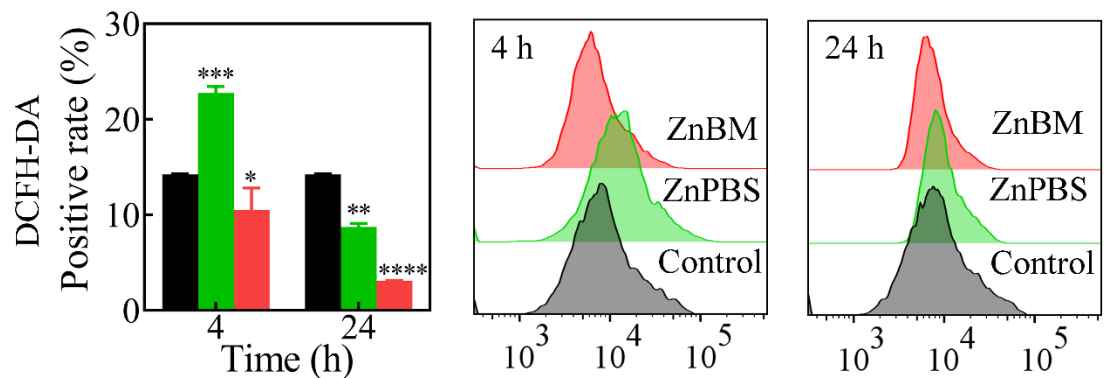


Figure S6. The positive rate (%) of FL1-positive RAW264.7 was analyzed by flow cytometry after treatment for 4 h or 24 h, and their corresponding flow histogram. Data are shown as mean \pm SD ($n=3$); * $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$, **** $P < 0.0001$, compared with Control group.

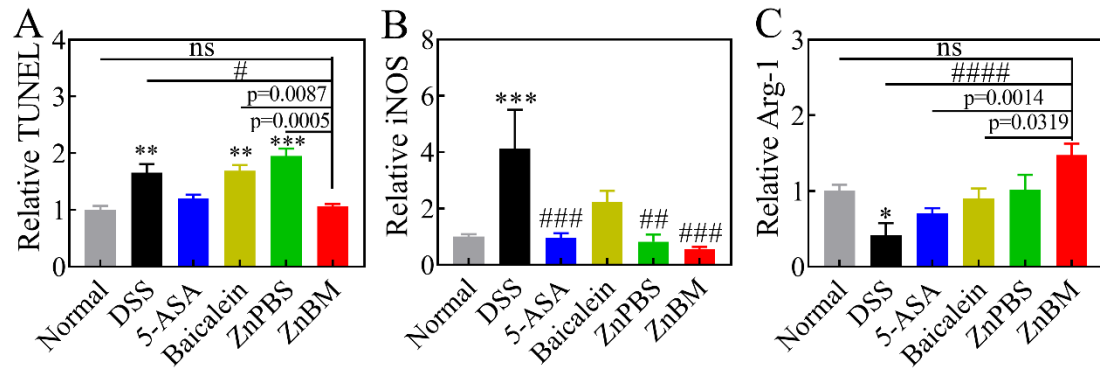


Figure S7. The quantitative analysis of TUNEL (A), iNOS (B) and Arg-1 (C) using Image J software. Data are shown as mean \pm s.e.m (n=3); ** $P < 0.01$, *** $P < 0.001$, compared with Normal group; # $P < 0.05$, ## $P < 0.01$, ### $P < 0.001$, #### $P < 0.0001$, compared with DSS group.

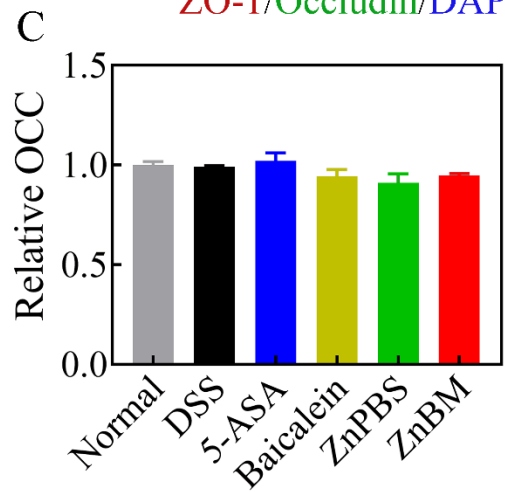
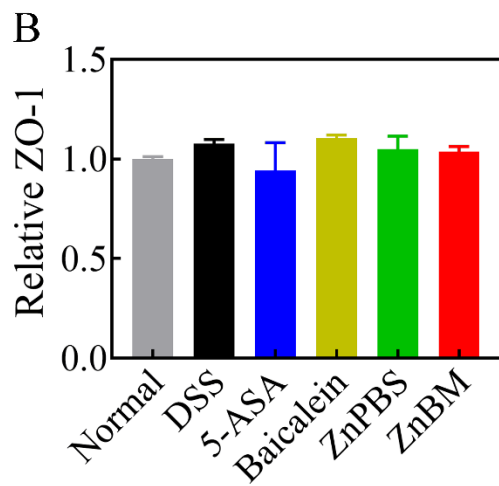
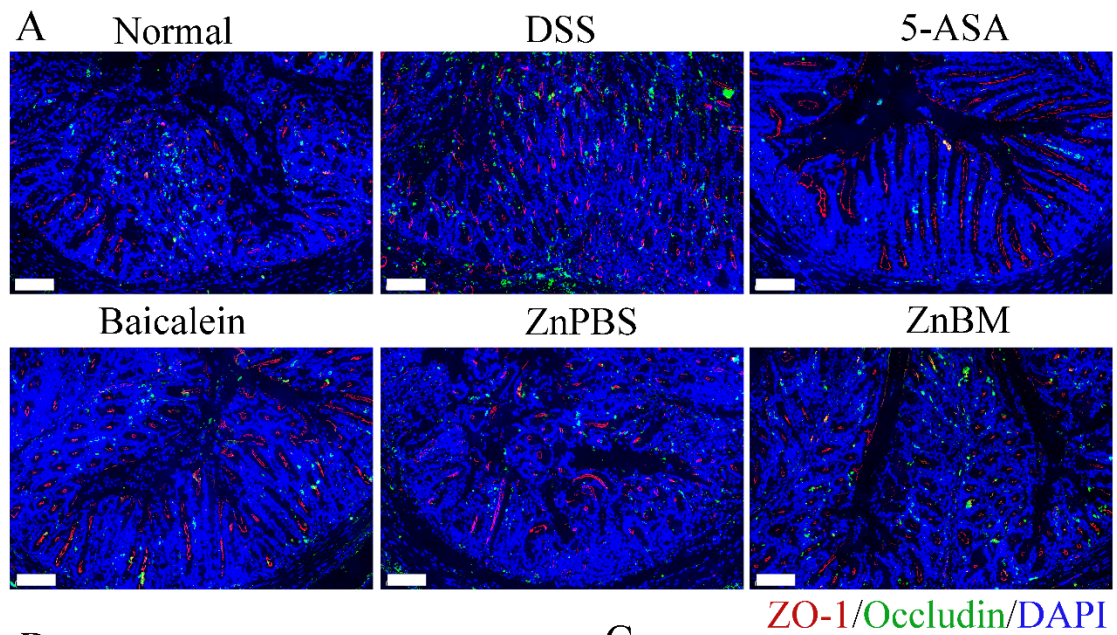


Figure S8. (A) Images of colon sections were observed by microscope after staining with ZO-1 and Occludin, and the quantitative analysis of ZO-1 (B) and Occludin (C) using Image J software. Data are shown as mean \pm s.e.m (n=3).

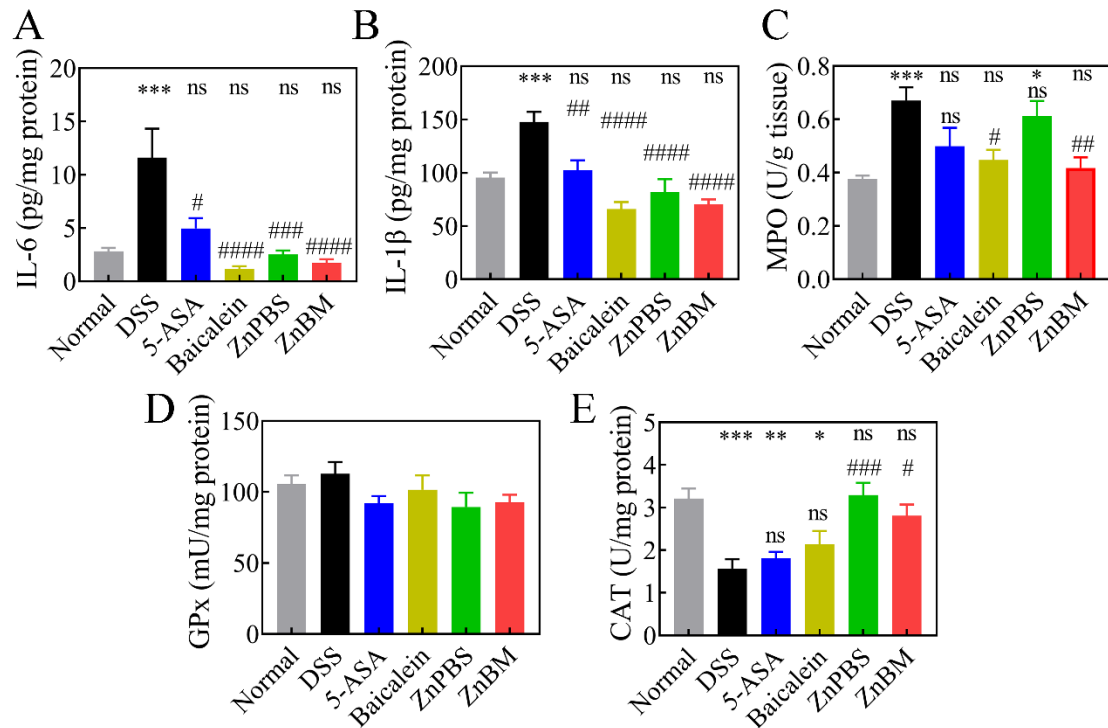


Figure S9. ZnBM improved the inflammatory response in DSS-induced acute colitis.

(A-B) The levels of IL-6 and IL-1 β , and (C-E) the activities of MPO, GPx, and CAT in the colon. Data are shown as mean \pm s.e.m (n=6-8); * P < 0.05, ** P < 0.01, *** P < 0.001, compared with Normal group; # P < 0.05, ## P < 0.01, ### P < 0.001, #### P < 0.0001, compared with DSS group.

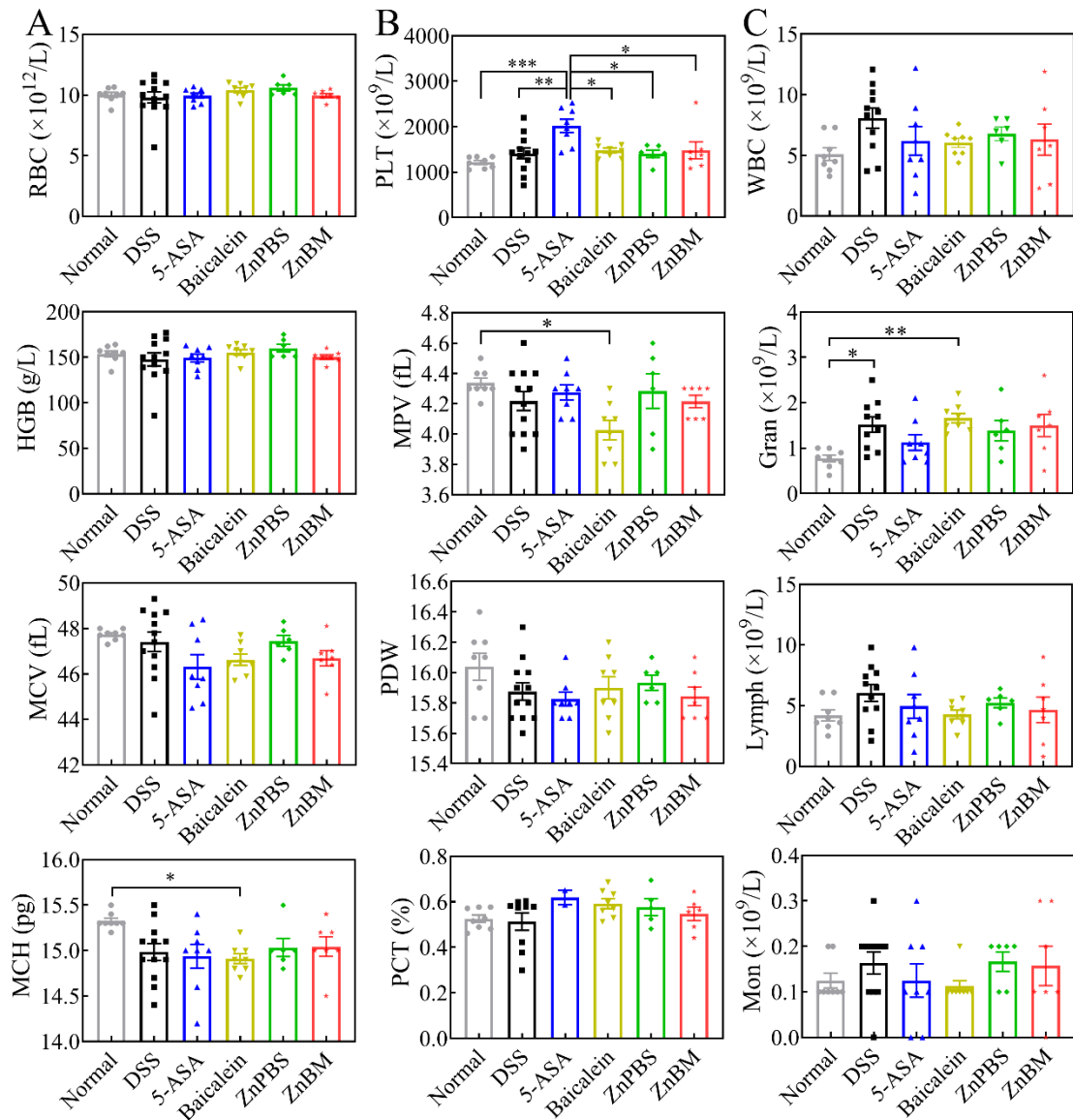


Figure S10. All relevant indicators of red blood cells (A), platelets (B) and white blood cells (C) obtained from the complete blood count (CBC) in DSS-induced acute colitis.

Data are shown as mean \pm s.e.m (n=6-8); * $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$.

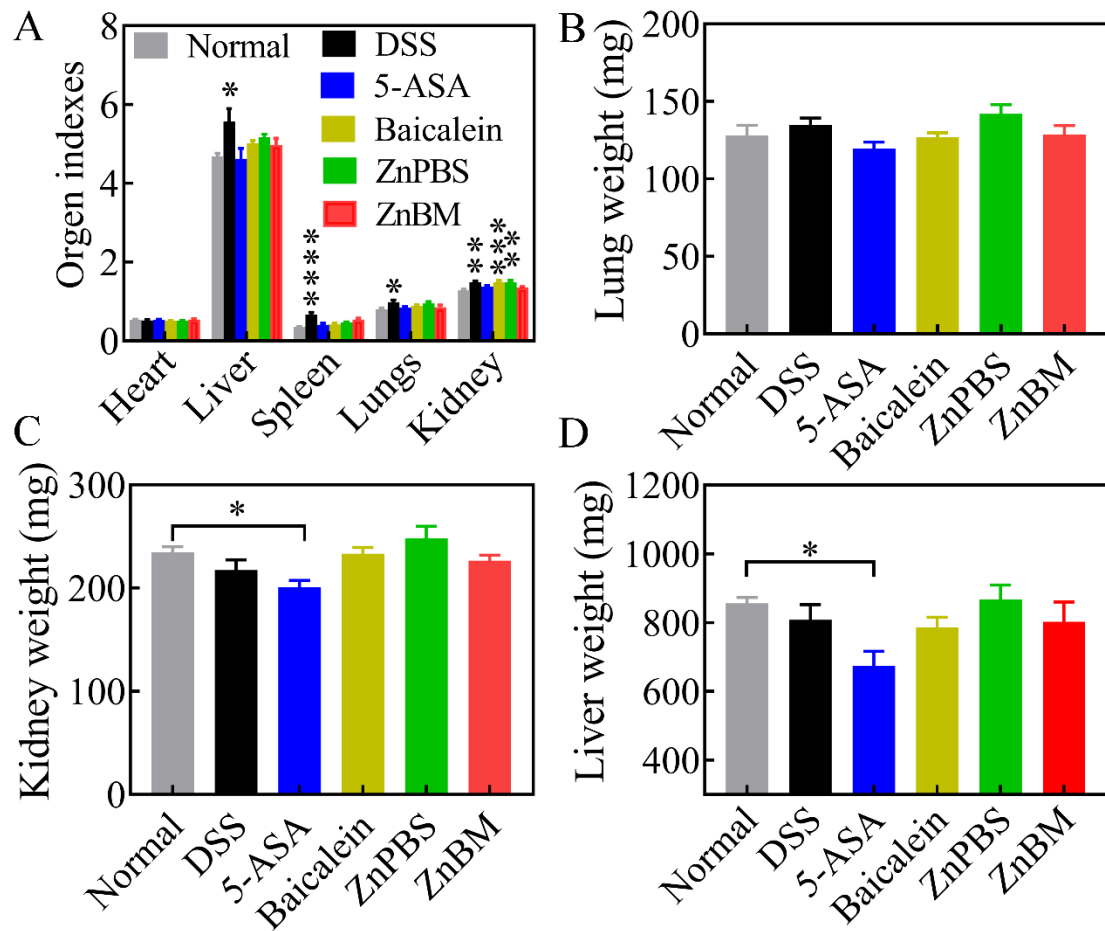


Figure S11. (A) The organ indexes (organ weight divided by mouse body weight) of mice, and the weight of Lung (B), Kidney (C) and Liver (D) in each group of mice on day 10. Data are shown as mean \pm s.e.m (n=6-8); * $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$, **** $P < 0.0001$, compared with Normal group.

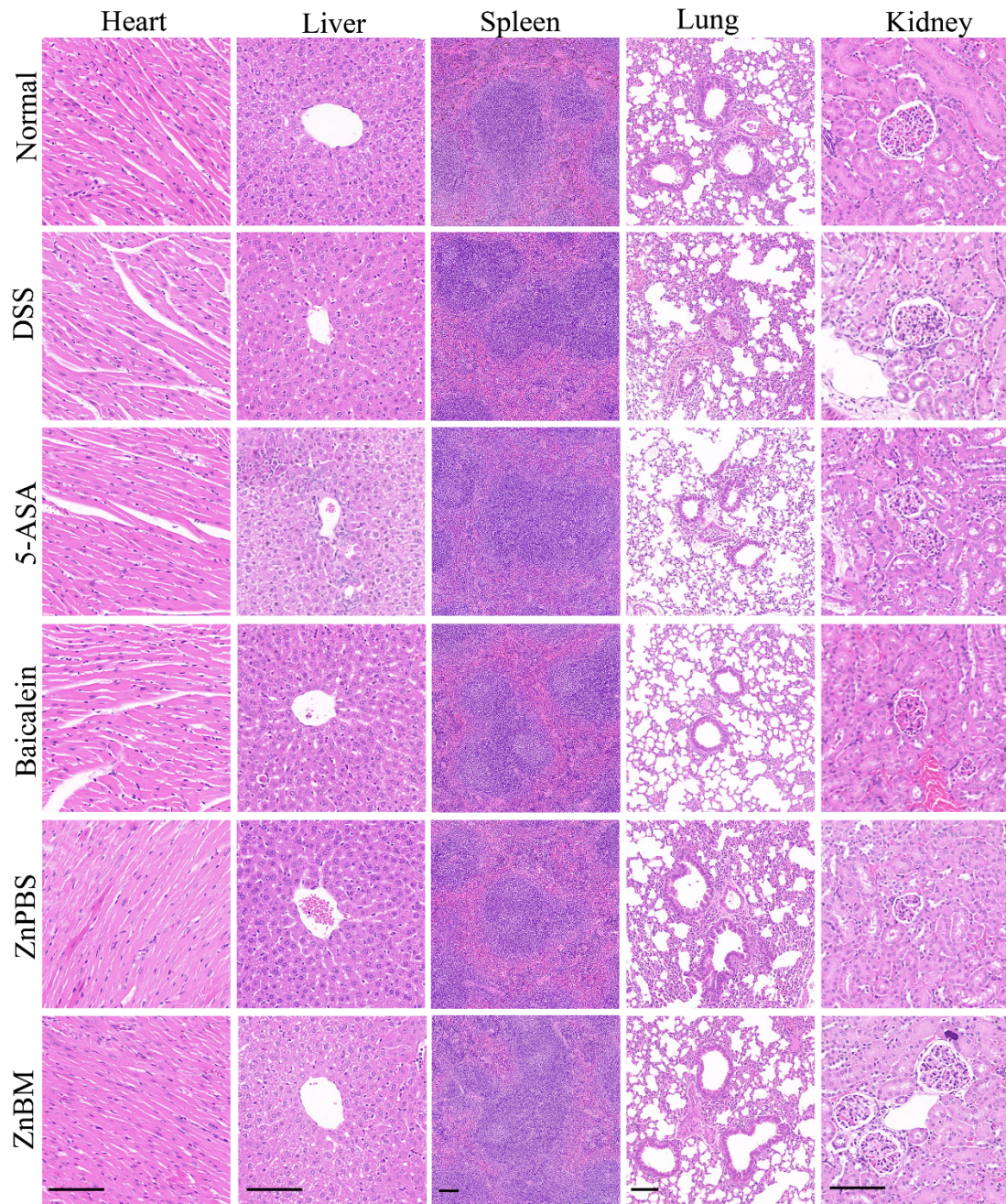


Figure S12. The images of organs sections after H&E staining (Bar=100 μ m), and photographs of the same organ were at the same magnification.

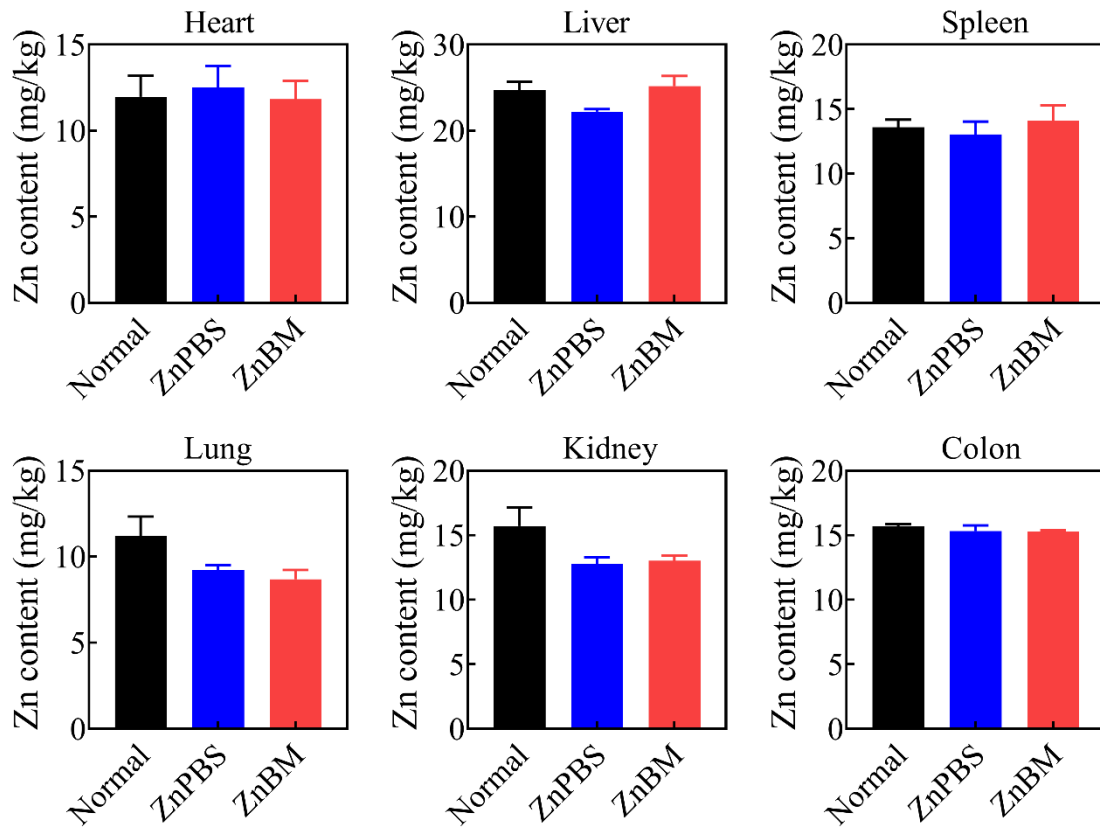


Figure S13. DSS-induced acute colitis mice were executed and organs were isolated at day 10 of treatment, the zinc content in the heart, liver, spleen, lung and colon was measured by ICP-MS. Data are shown as mean \pm s.e.m (n = 3).

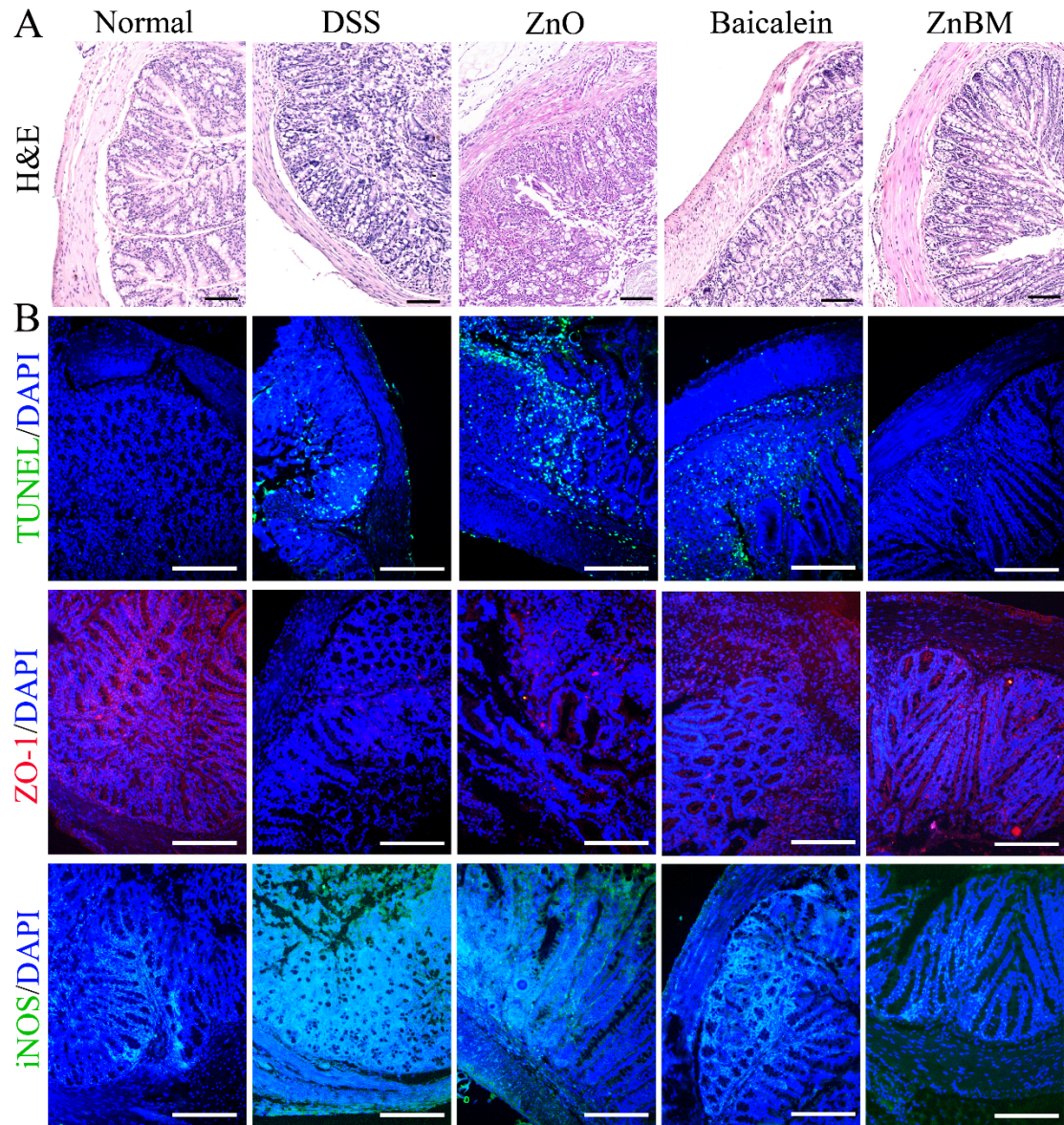


Figure S14. Images of colon sections from DSS-induced chronic colitis were observed by microscope after staining with H&E, TUNEL, ZO-1, and iNOS. Bar=100 μ m.

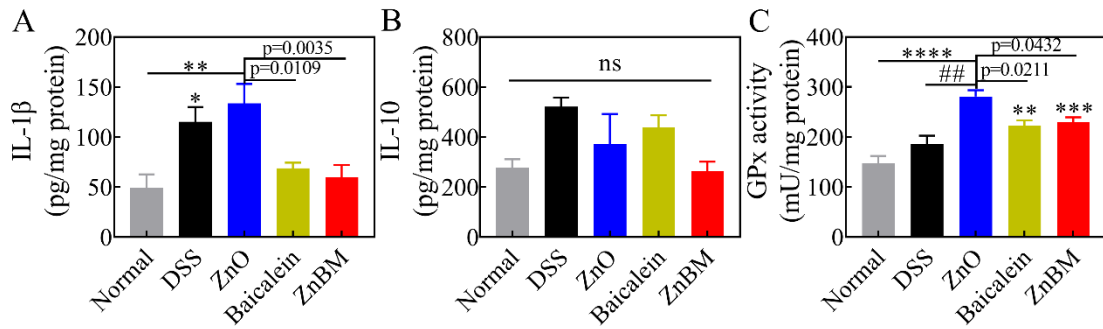


Figure S15. The levels of IL-1 β and IL-10, and the enzymatic activity of GPx in the supernatant of colonic homogenate from DSS-induced chronic colitis. Data are shown as mean \pm s.e.m (n=3-7); * P < 0.05, ** P < 0.01, **** P < 0.0001, compared with Normal group. ### P < 0.01, compared with DSS group.

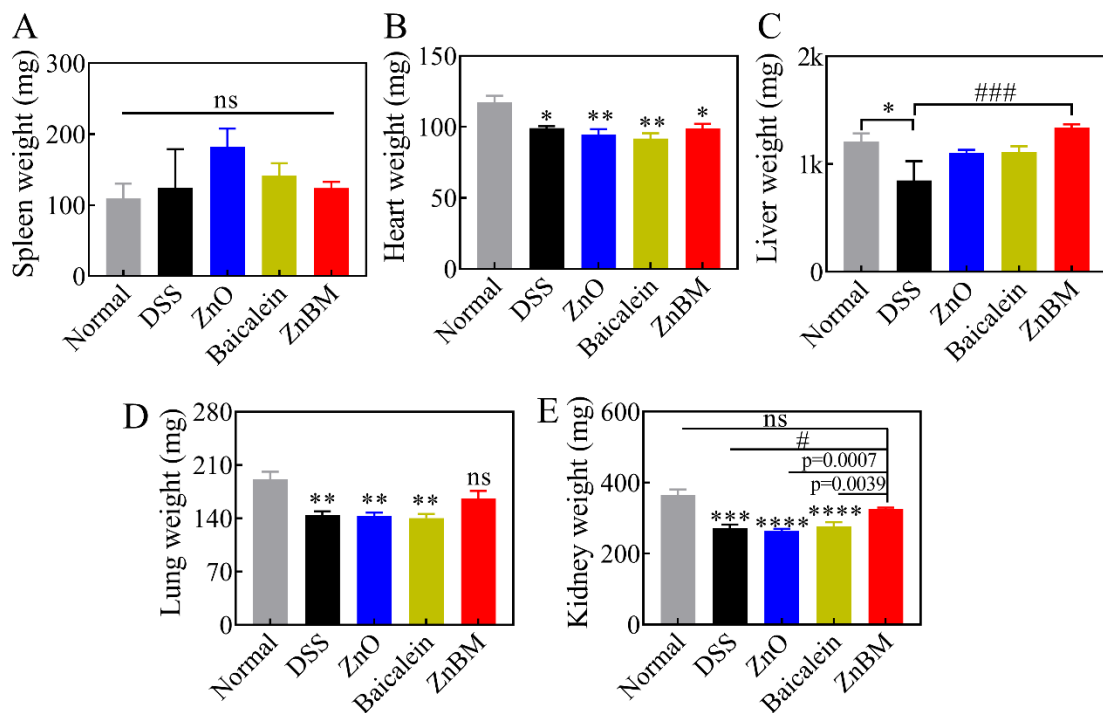


Figure S16. (A) The organ weight of Spleen (A), Heart (B), Liver (C), Lung (d) and Kidney (E) in each group of mice from DSS-induced chronic colitis. Data are shown as mean \pm s.e.m (n=3-10); * P < 0.05, ** P < 0.01, *** P < 0.001, **** P < 0.0001, compared with Normal group; # P < 0.05, ### P < 0.001, compared with DSS group.

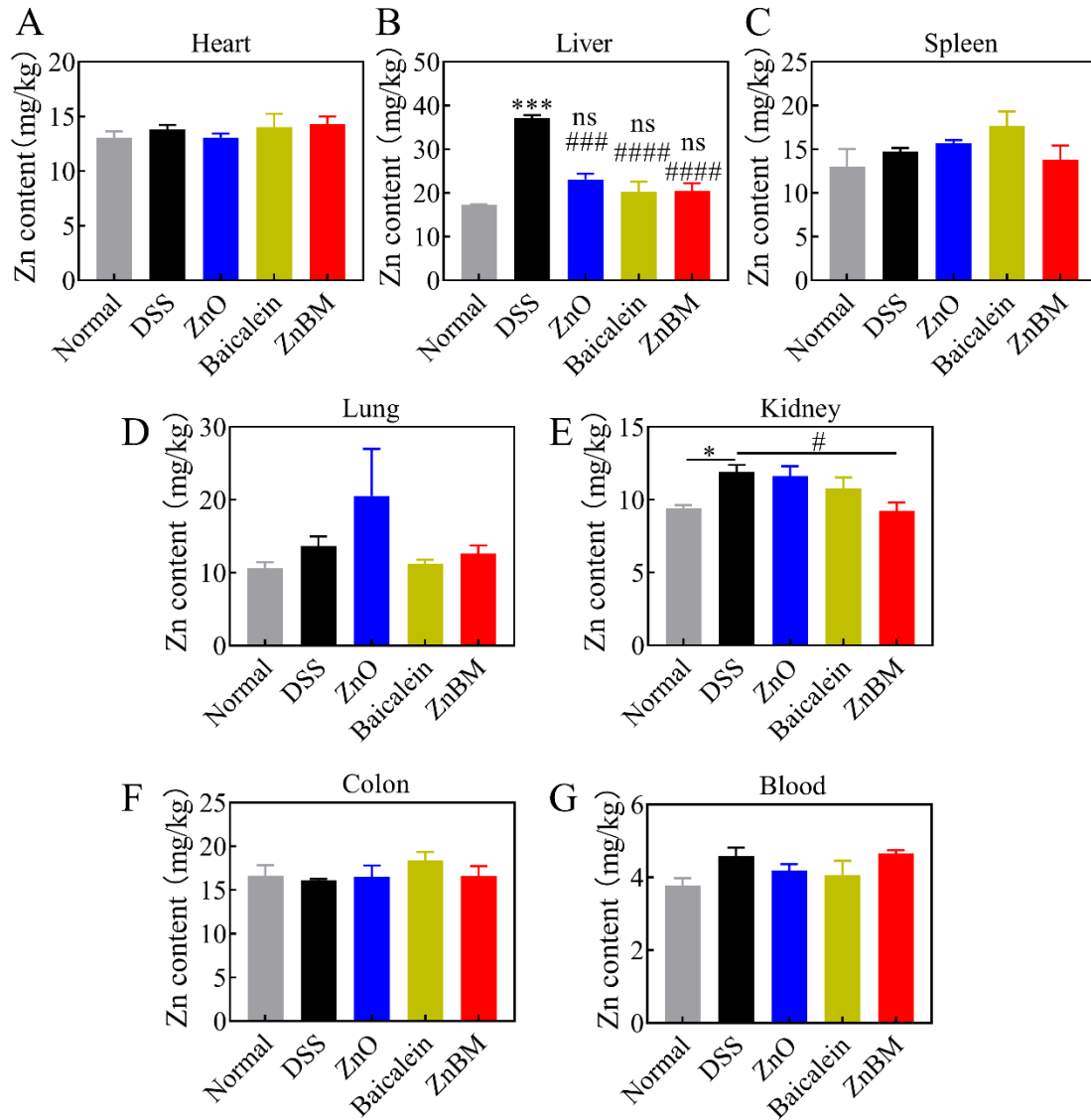


Figure S17. DSS-induced chronic colitis mice were executed and organs were isolated at day 53 of treatment, (A-G) the zinc contents in the heart, liver, spleen, lung, kidney, colon and blood were measured by ICP-MS. Data are shown as mean \pm s.e.m (n=3); * P < 0.05, *** P < 0.001, compared with Normal group; # P < 0.05, #### P < 0.001, ##### P < 0.0001, compared with DSS group.

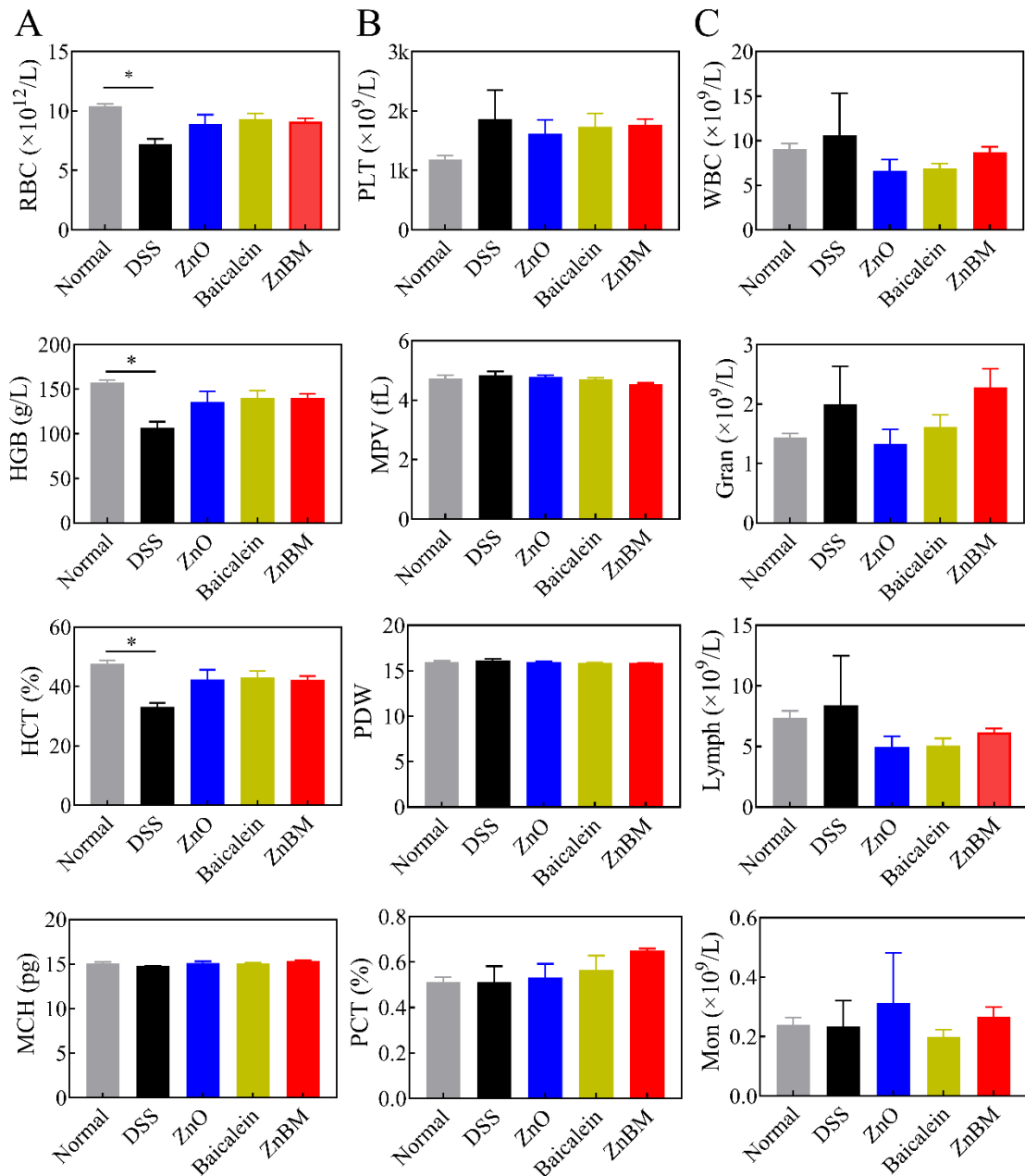


Figure S18. All relevant indicators of red blood cells (A), platelets (B) and white blood cells (C) obtained from the complete blood count (CBC) in DSS-induced chronic colitis. Data are shown as mean \pm s.e.m (n = 3-10); * $P < 0.05$, compared with Normal group.