The supplementary materials

Figures in supporting materials

1. The inhibitory effect of *S. epidermidis* fermentation broth on *P.ances*

Resuspend the bacterial cells using sterile PBS and diluted fermentation broth, then dilute the resuspended bacterial broth further. Fig. S1-a and b illustrate the resuspended bacterial broth diluted to 1.0×10^4 and 1.0×10^5, respectively.

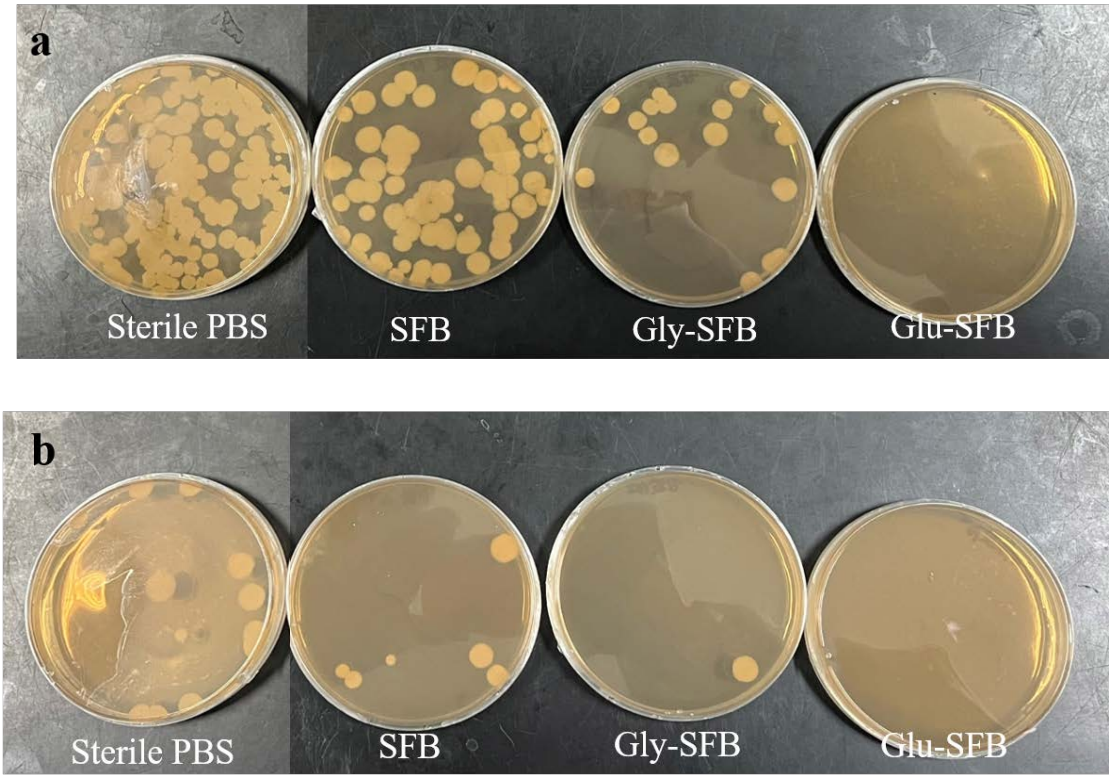
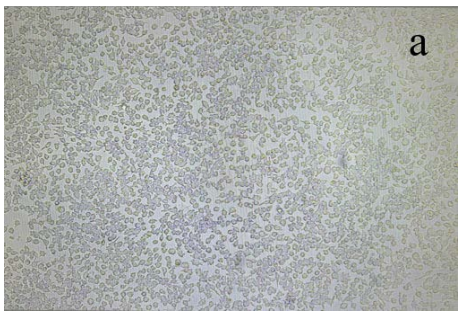


Figure S1. The *P. acnes* strain count with treated by initial culture medium or *S. epidermidis* fermentation broth，which were diluted to 1.0×10^4 (a) and 1.0×10^5 (b), respectively.

2. Cellular morphology following various TI.P treatments

Thermal-inactivated *P. acnes* at different concentrations were introduced into RAW264.7 cell culture medium and incubated together for 24 hours. The survival status of RAW264.7 cells was observed under a microscope, a represents RAW cells in the normal state, and b-e represents RAW264.7 cell states after treatment with 0.25 TI.P, 0.5 TI.P, TI.P, and 2 TI.P, respectively.



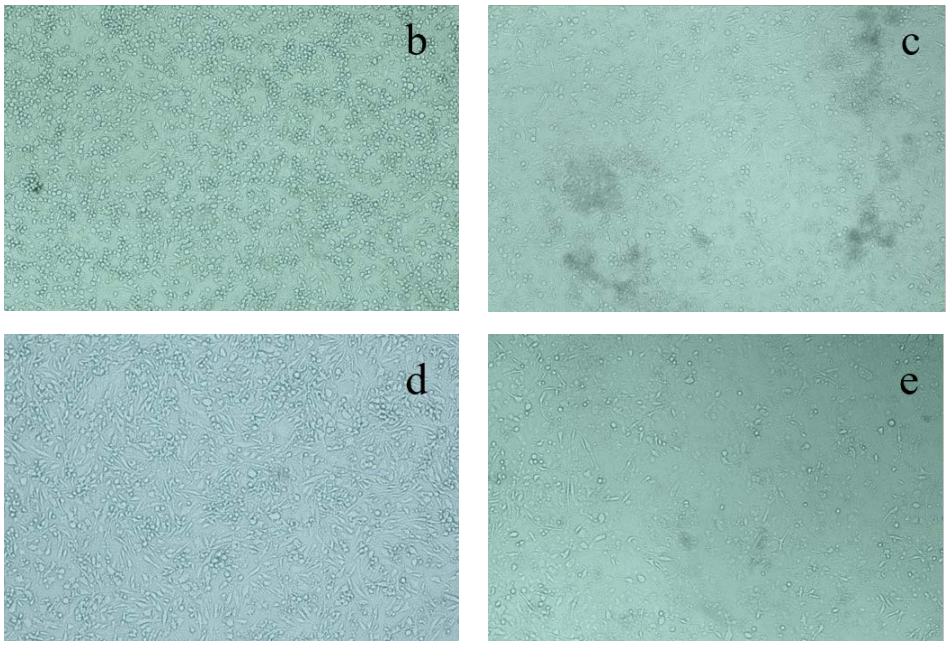
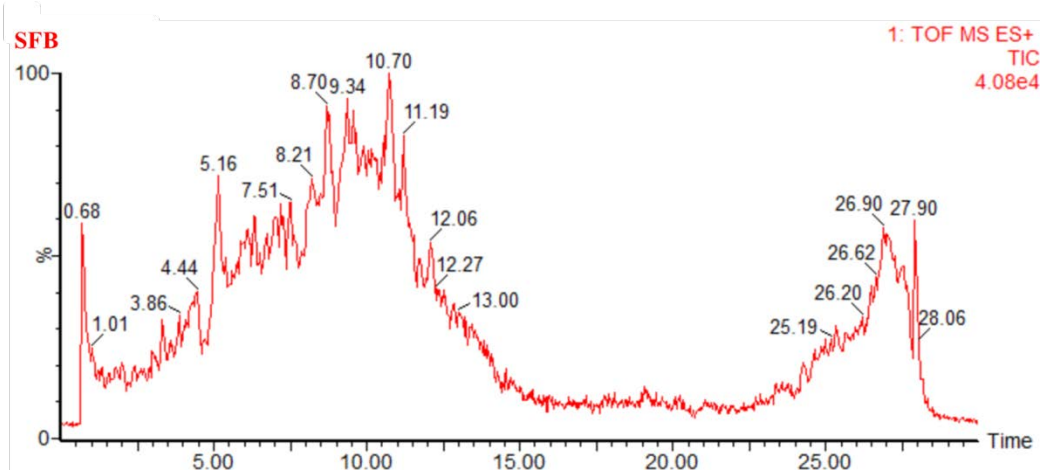


Figure S2. The survival status of RAW264.7 cells in the normal condition (a), and following treatment with 0.25 TI.P (b), 0.5 TI.P (c), TI.P (d), and 2 TI.P (e), respectively.

3. Total ion chromatogram of fermentation broth by LC-MS/MS

According to section 2.5, the total ion chromatogram of the three types of fermentation broth analyzed by LC-MS/MS is shown in Fig. S6.



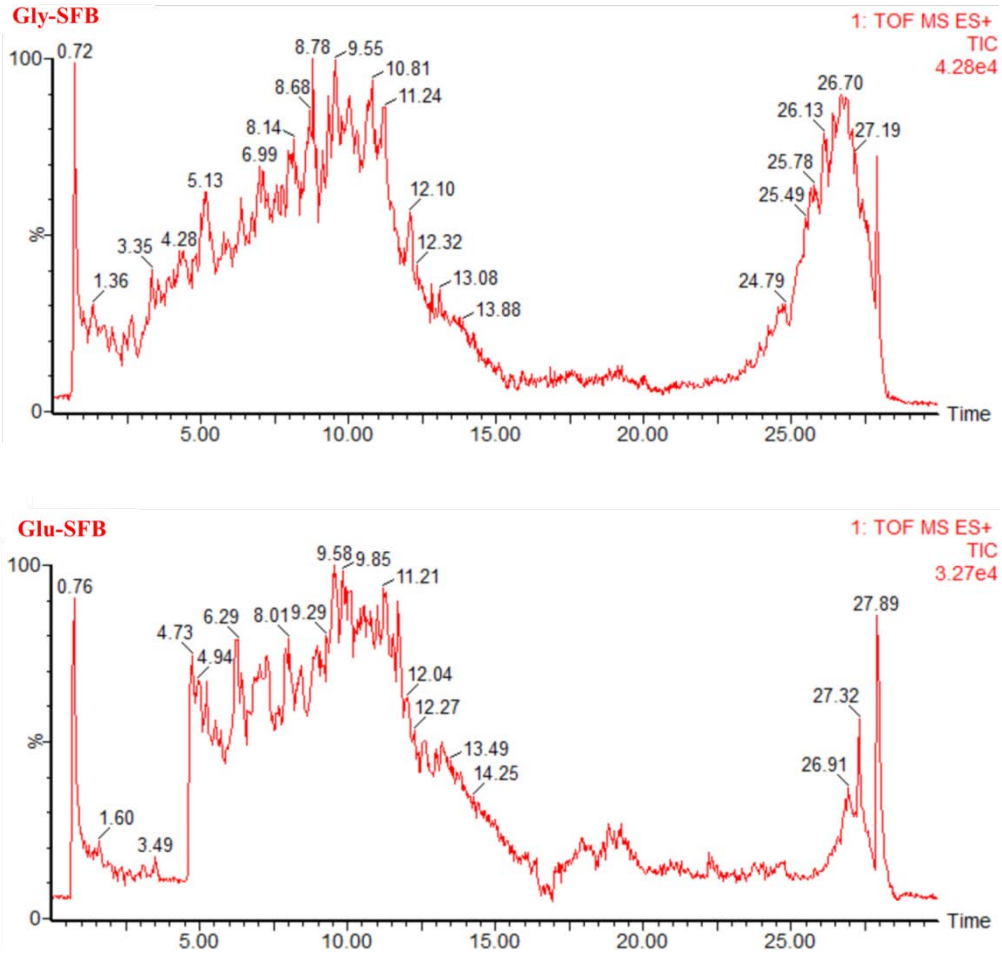


Figure S3 The total ion chromatogram of SFB, Gly-SFB and Glu-SFB

4. Anti-inflammatory characteristics of the other oligopeptides

According to the method described in section 2.9 of the manuscript, QIGP, VRFI, and YIR at a concentration of 0.1mg/mL were added in a ratio of 10% to RAW cell culture medium containing TIP. After co-incubation for 24 hours, the changes in inflammatory factors IL-1 β and IL-6 were measured. The result is shown in Figure S4.

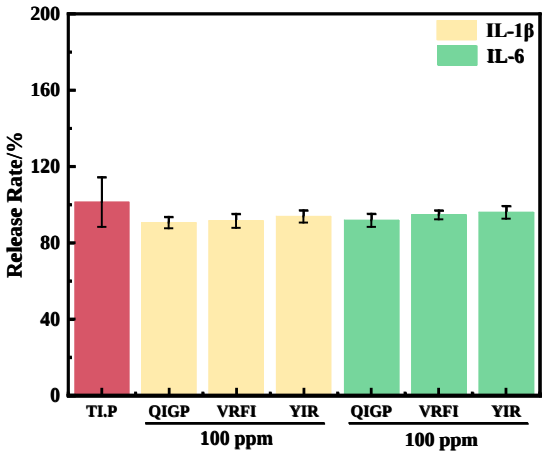


Figure S4 Effect of oligopeptides on the protein expressions of NF-κB signaling pathway of RAW 264.7 cells.