

## **Proteomics Analysis to Investigate the Anti-inflammatory Effects of a Marine-derived Compound (Wa-25)**

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Many inflammatory diseases are growing increasingly common in the aging society of Taiwan. Inflammation cascades can cause diseases such as rheumatoid arthritis, osteoarthritis, chronic asthma, multiple sclerosis, and so on. The clinically used anti-inflammatory drugs have many side effects and are expensive. Therefore, it is imperative that we find alternatives to these drugs. Marine natural compounds offer great hope in the development of drugs for treating inflammatory diseases. In the present study, we found that Wa-25, which is a marine natural compound isolated from *Cladiella australis*, significantly inhibited the expression of the pro-inflammatory protein, inducible nitric oxide synthase (iNOS), in the lipopolysaccharides (LPS)-stimulated RAW 264.7 macrophage cell line. We suggest that Wa-25 may serve as a potential new anti-inflammatory agent. However, the mechanism by which the anti-inflammatory effects of Wa-25 are mediated is yet unclear. Therefore, we performed two-dimensional electrophoresis (2-DE) to investigate the regulatory mechanism for the anti-inflammatory effect of Wa-25. We isolated some proteins that may be involved in the anti-inflammatory mechanism of Wa-25. In addition, we used immunoprecipitation to find that the protein (NPM) could interact with nuclear factor kappa B (NF- $\kappa$ B). Therefore, we hypothesize that NPM may be involved in the regulation of NF- $\kappa$ B to enhance the down-regulation of iNOS proteins. In summary, the anti-inflammatory effects of Wa-25 are probably mediated through some other signaling pathway. Importantly, Wa-25 not only offers some new biomarkers of inflammation but also provides an encouraging outlook on therapeutic approaches.