



Amino Acid Analysis in Fish Feed

Monitoring the concentration of amino acids in fish feed is critical to the health, growth and sustainability of aquaculture operations for several reasons. Firstly, fish feed should be rich in proteins, which are essential for fish growth and development. An optimal balance of amino acids ensures proper muscle development and overall growth [1]. Further, certain amino acids play a crucial role in maintaining and enhancing the fish's immune system, which helps them resist disease and reduce mortality rates. Monitoring ensures that fish feed contains all essential amino acids in the right proportions to avoid nutritional deficiencies that can lead to poor growth, deformities and increased susceptibility to disease.

Using our LC-MS MetAmino® kit, we tested samples of fish feed after protein hydrolysis. Here we show a comparison of the mass chromatograms of the standard mixture (Fig. 1) and an example of the tested fish feed samples after protein hydrolysis (Fig. 2).

The sample preparation: Fish feed (50 mg) was placed in a test tube, 6M HCl (5 mL) was added and the test tube was sealed. The mixture was heated at 110 °C for 24 hours. After cooling, the mixture (50 µL) was diluted 5 times with 200 µL of deionized water. Further, 15 µL of such diluted mixture was taken for analysis. IS (10 µL) was added and the sample preparation protocol was continued with the addition of CTS and RDS according to the general protocol scheme [2].

The amino acid profile after hydrolysis corresponded to the protein used for the preparation of the fish feed.

References:

- [1] Wei, Y.; Shen, H.; Xu, W.; Pan, Y.; Chen, J.; Zhang, W.; Mai, K. Replacement of dietary fishmeal by Antarctic krill meal on growth performance, intestinal morphology, body composition and organoleptic quality of large yellow croaker *Larimichthys crocea*; *Aquaculture*; 2019, 734281.
- [2] Chromservis: <https://www.chromservis.eu/en/metamino-kit-400139>

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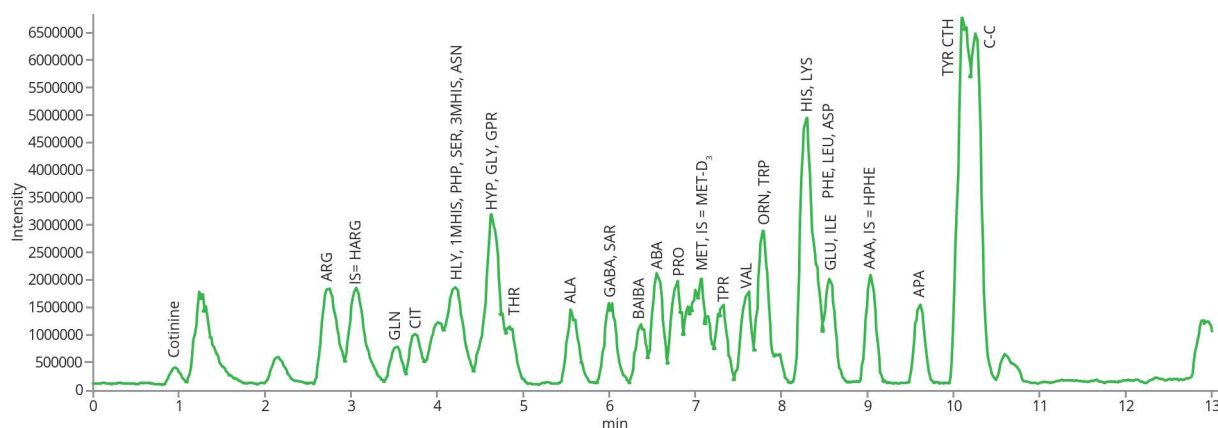


Fig. 1: Standard mixture – LC MetAmino® kit; mass extracted chromatogram; 5 nmol SD1 and SD2 according to the manual [2]

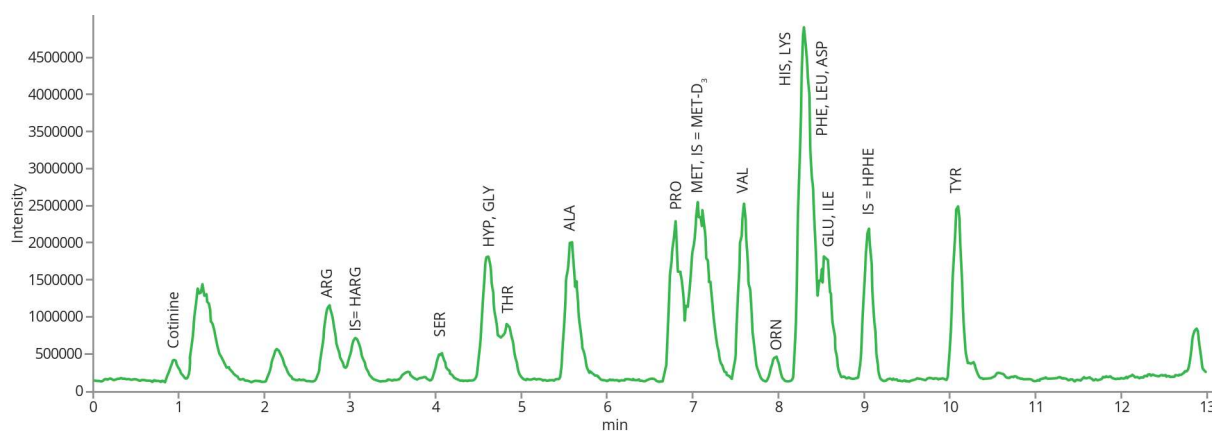


Fig. 2: Fish feed hydrolysate – LC MetAmino® kit; mass extracted chromatogram; (30 µg of sample after recalculation)