PRELIMINARY STUDIES ON THE RELATIONSHIP OF TEMPERATURE AND TIME OF DIGESTION ON ENZIMATIC ACTIVITY AND GROWTH OF *SERIOLA DUMERILI.*

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Seriola dumerili is one of the species proposed for different studies within the DIVERSIFY project because it is a specie of high interest for the future of aquaculture due to its high commercial value, besides of its high rate of growth and a good survival rate in captivity.

In this study, we focused on how different temperatures and digestion times may affect both the enzymatic activity and the growth of the fish.

To do this it has been used *Seriola dumerili* fishes which have an estimated weight between 74 to 527 g. They have been breeded at different temperatures (17, 22 and 26°C) during 105 days and they had their stomach and intestine extracted in several digestion times (0,2,4,8,12,18,24h after food ingestion). Then a serie of previous essays were made for pH and E:S stomachic and intestinal relationship, knowing the temperature of the tanks where these fishes lived. Having these information, it has been decided to execute an experiment design according to the response surface model called Box-Behnken design. A random combination of tests was generated by MATTAB 17 software using the design and analysis of the experiments. The ranges used to define factors were based on the results of the previous physiological study:

Temperature: between 17 and 26°C.

E:S stomachic relationship: between 0.14 and 0.2U/mg protein.

pH intestinal: between 6.5 and 7.5.

With these results and after carrying out the tests specified by MATTAB 17 software, the following surface model was obtained:

$$\begin{aligned} AA\ Hidrolisis = {} & -180.8 + 0.4152\ temperature - 273.0\ E{:}S\ stomachic \\ & + 56.95\ ph\ intestinal - 0.004877\ temperature^2 \\ & + 1\,752\ (E{:}S\ stomachic)^2 - 4.407\ (pH\ intestinal)^2 \\ & - 1\,407\ temperature * E{:}S\ stomachic + 0.2807\ temperature \\ & * pH\ intestinal \end{aligned}$$

The results obtained applying this model are presented below:

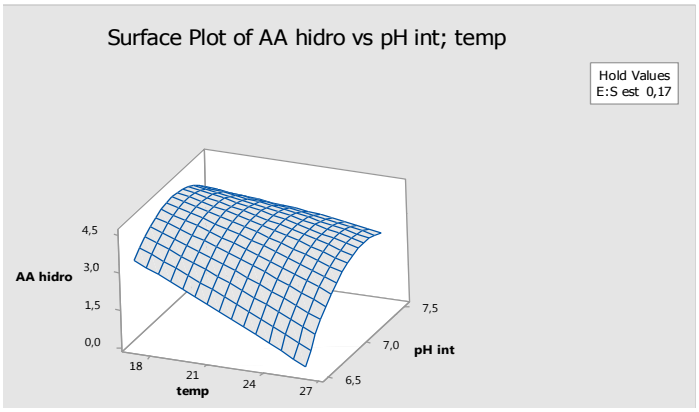

Figure 1: Surface Model that predicts the hydrolysis of AA from the protein used in the function of the pH intestinal and temperature.

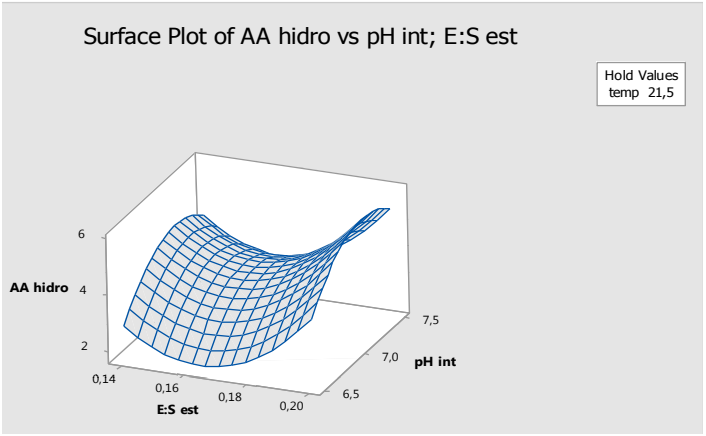

Figure 2: The response surfaces showing the variations in protein hydrolysis as a function of pH intestinal and E:S stomachic.

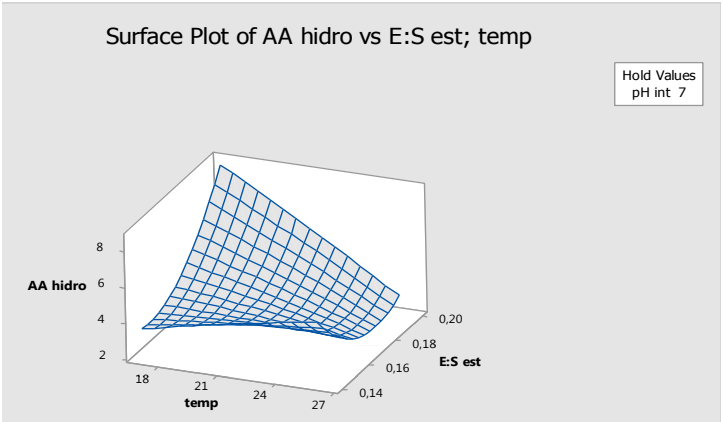

Figure 3: The response surfaces showing the variations in protein hydrolysis as a function of temperature and E:S stomachic.