

Changes in Amino Acids Content in Muscle of European Eel (*Anguilla anguilla*) in Relation to Body Size

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Abstract : European eels (*Anguilla anguilla*) belong to Anguilliformes order and Anguillidae family. They are generally classified as warm-water fish. Eels have a great commercial value in Europe and Asian countries. Eels can reach high weights, although their commercial size is relatively low in some countries. The capture of larger eels would facilitate the recovery of the species, as well as having a greater number of either glass eels or elvers for aquaculture. In the last years, the demand and the price of eels have increased significantly. However, European eel is considered critically endangered by the International Union for the Conservation of Nature (IUCN) Red List. The biochemical composition of fishes is an important aspect of quality and affects the nutritional value and consumption quality of fish. In addition, knowing this composition can help predict an individual's condition for their recovery. Fish is known to be important source of protein rich in essential amino acids. However, there is very little information about changes in amino acids composition of European eels with increase in size. The aim of this study was to evaluate the effect of two different weight categories on the amino acids content in muscle tissue of wild European eels. European eels were caught in River Ulla (Galicia, NW Spain), during winter. The eels were slaughtered in ice water immersion. Then, they were purchased and transferred to the laboratory. The eels were subdivided into two groups, according to the weight. The samples were kept frozen (-20 °C) until their analysis. Frozen eels were defrosted and the white muscle between the head and the anal hole. was extracted, in order to obtain amino acids composition. Thirty eels for each group were used. Liquid chromatography was used for separation and quantification of amino acids. The results conclude that the eels are rich in glutamic acid, leucine, lysine, threonine, valine, isoleucine and phenylalanine. The analysis showed that there are significant differences ($p < 0.05$) among the eels with different sizes. Histidine, threonine, lysine, hydroxyproline, serine, glycine, arginine, alanine and proline were higher in small eels. European eels muscle presents between 45 and 46% of essential amino acids in the total amino acids. European eels have a well-balanced and high quality protein source in the respect of E/NE ratio. However, eels with higher weight showed a better ratio of essential and non-essential amino acid.

Keywords : European eels, amino acids, HPLC, body size

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