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Inma Salvat-Leal, Aurelio Ortega, **Edurne Blanco**, Amanda Miras, Diego Romero, 2026. [Elemental composition in the bones and gills of juvenile Atlantic Bluefin Tuna \(Thunnus thynnus\): can it be used to distinguish batches?](#)

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Abstract Atlantic Bluefin Tuna (Thunnus thynnus) aquaculture has developed rapidly in recent years, making it necessary to discriminate between specimens derived from aquaculture (captive-reared) and those derived from fisheries (wild-caught). In this study, a method based on the chemical composition of discard tissues (gills and bones) in 3 batches of juvenile T. thynnus (tank-cultured on land, cage-reared in the sea, and wild-caught) was assessed. The concentrations of 11 macro- and micro-elements (i.e., Ca, Fe, K, Mg, Na, P, S, Cu, Mn, Zn, and Sr) were determined and evaluated using an analysis of variance (ANOVA) and 2 multivariate tests, namely a principal component analysis (PCA) and discriminant canonical analysis (DCA). The best results were obtained from the gills and from the batch corresponding to the wild-caught specimens. However, the results were not robust enough to establish any specific pattern that would facilitate the identification of the origin of T. thynnus specimens.

Keywords: Batch discrimination, Bones, Gills, Inorganic elements, Juvenile, Trace elements, Atlantic Bluefin Tuna, Thunnus thynnus