Molecular weight analysis of *M.merluccius* and *P. glauca* collagen by LS-GPC: effect of temperature/stirring time on *solubility*.

Blanco, M.[1,*], Sanz, N.[1], Valcarcel, J.[1], Pérez-Martín, R.I.[1] and Sotelo, C.[1]

[1]Instituto de Investigaciones Marinas, Vigo, Spain

mblanco@iim.csic.es

The new reform of the Common Fisheries Policy (CFP) and several EU marine approaches such as *Blue Growth* and *2020 EU strategy* are focused on the development of a sustainable socioeconomic and environmental growth in the marine and maritime EU region. To achieve this goal the valorization and biotechnological transformation of raw marine materials (discards and by-products) for the isolation/production of molecules that could be used in a high diversity of applications including antioxidants, antiinflamatory, antifouling, biomarkers, etc., might be an useful tool. *Merluccius merluccius* discards due to Minimum Landing Size restrictions imposed by the Landing Obligation included in the new CFP and *Prionace glauca* skin byproducts are susceptible to be valorized based on the higher collagen content of connective tissues. Collagen, the main structural protein in connective tissue, has a particular heterotrimeric structure which has been previously described for several species. As the structure of collagen and other proteins is determinant of its function, the final objective of this study is to analyze differences between *M.merluccius* and *P. glauca* collagen, to evaluate its potential use in cosmetics. Some differences on the collagen structure between teleost and chondrichthyes have been previously reported however there is a lack of detailed information regarding molecular weight (MW) differences of α-chains determined by GPC-LS between these two groups. To study those differences the solubilization of collagen in the mobile phase of the chromatography is a key step. As the solubilization of collagen from *P. glauca* skin is more difficult than the one obtained from *M.merluccius* skin, the chromatographic behavior of both collagens under different temperature and stirring times was studied to test the influence of those factors on the collagen solubility. Results showed that there is no influence of temperature and stirring effect on *M. merluccius* collagen solubility. Regarding *P. glauca* collagen, there is a positive effect of higher temperature on the solubilization of high MW components in all the stirring times analyzed. Furthermore, no effect of stirring time increments is observed on the solubility of collagen if no temperature is applied. Besides, higher MW components are observed when the sample is left stirring for 48 h and just after a temperature of 50ºC is applied for 15 minutes. Finally, higher molecular weight components are obtained after 48 of stirring time in the three temperatures/incubation times assayed.

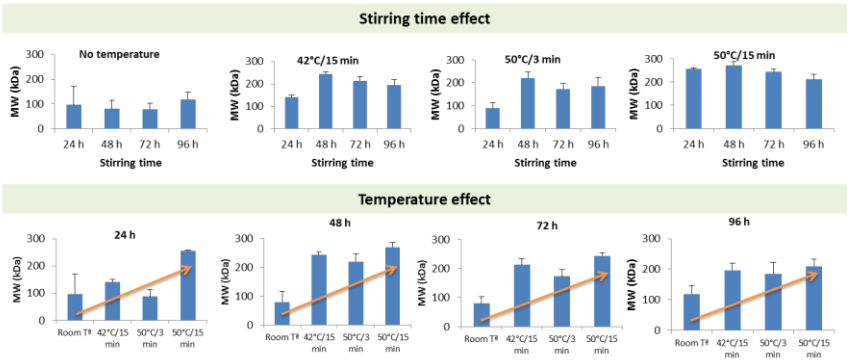

Figure 1. Effect of stirring time and temperature on molecular weight averages (Mw) of *P. glauca* collagen on GPC mobile phase after different temperature/stirring conditions.

Acknowledgments: Authors thank to Marta P. Testa and Helena P. Malvido for their excellent technical assistance**.** Authors are grateful to CVMar+I project for the financial support (0302_CVMAR_I_1_P, POCTEP 2015).