

Technical University of Denmark



## Neuroendocrine and immune responses undertake different fates following tryptophan or methionine dietary treatment: tales from a teleost model

Azeredo, Rita; Machado, M.; Afonso, A.; Fierro-Castro, C.; Reyes-Lopez, F. E.; Tort, L.; Gesto, Manuel; Conde-Sieira, M.; Míguez, J.M. ; Soengas, J. L.; Kreuz, E.; Wuertz, S.; Peres, H.; Oliva-Teles, A.; Costas, B.

*Publication date:*  
2017

*Document Version*  
Publisher's PDF, also known as Version of record

[Link back to DTU Orbit](#)

### *Citation (APA):*

Azeredo, R., Machado, M., Afonso, A., Fierro-Castro, C., Reyes-Lopez, F. E., Tort, L., ... Costas, B. (2017). Neuroendocrine and immune responses undertake different fates following tryptophan or methionine dietary treatment: tales from a teleost model. Abstract from Congress of Iberian Association for Comparative Endocrinology, Vigo, Spain.

**DTU Library**  
Technical Information Center of Denmark

---

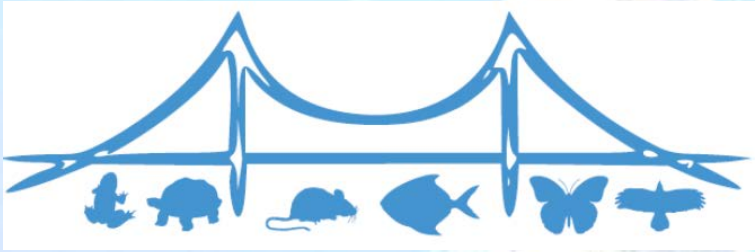
### **General rights**

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

# Program and Communications



## XI Congress of Iberian Association for Comparative Endocrinology

*Vigo, July 13<sup>rd</sup>-15<sup>th</sup> 2017*



UniversidadeVigo



## NEUROENDOCRINE AND IMMUNE RESPONSES UNDERTAKE DIFFERENT FATES FOLLOWING TRYPTOPHAN OR METHIONINE DIETARY TREATMENT: TALES FROM A TELEOST MODEL

*Rita Azeredo*<sup>1,2\*</sup>, *M. Machado*<sup>1,3</sup>, *A. Afonso*<sup>1,3</sup>, *C. Fierro-Castro*<sup>4</sup>, *F.E. Reyes-López*<sup>4</sup>, *L. Torf*<sup>4</sup>, *M. Gesto*<sup>5</sup>, *M. Conde-Sieira*<sup>1,5</sup>, *J.M. Míguez*<sup>5</sup>, *J.L. Soengas*<sup>5</sup>, *E. Kreuz*<sup>6</sup>, *S. Wuertz*<sup>6</sup>, *H. Peres*<sup>1</sup>, *A. Oliva-Teles*<sup>1,2</sup>, *B. Costas*<sup>1,3</sup>. E-mail: [mleme@ciimar.up.pt](mailto:mleme@ciimar.up.pt)

<sup>1</sup>Centro Interdisciplinar de Investigação Marinha e Ambiental, Novo Edifício do Terminal de Cruzeiros do Porto de Leixões, Matosinhos, Portugal. <sup>2</sup>Departamento de Biologia, Faculdade de Ciências da Universidade do Porto, Portugal. <sup>3</sup>Instituto de Ciências Biomédicas Abel Salazar, Universidade do Porto, Portugal. <sup>4</sup>Department of Cell Biology, Physiology and Immunology, Universitat Autònoma de Barcelona, Spain. <sup>5</sup>Laboratorio de Fisiología Animal, Departamento de Biología Funcional e Ciencias da Saúde, Faculdade de Biología and Centro Singular de Investigación Mariña-ECIMAT, Universidade de Vigo, Spain. <sup>6</sup>Department of Ecophysiology and Aquaculture, Leibniz-Institute of Freshwater Ecology and Inland Fisheries, Berlin, Germany.

Given their involvement in immune response mechanisms, it was decided to study the immunomodulatory effect of methionine and tryptophan on the inflammatory and neuroendocrine responses of the European seabass, *Dicentrarchus labrax*. Fish were fed methionine and tryptophan-supplemented diets (MET and TRP, respectively) or a control diet meeting the AA requirement levels (CTRL) for fourteen days. Fish were sampled for the assessment of the immune status whereas the remaining fish were sampled either 4 or 24 h post bacterial challenge. Respiratory burst (RB) activity, brain monoamines, plasma cortisol and immune-related gene expression clearly showed distinct and sometimes opposite patterns regarding the effects of dietary AA. RB was lower in TRP-fed fish but both supplemented induced plasma cortisol after the inflammatory insult whereas gene expression of glucocorticoid receptors was down-regulated. Though some pro-inflammatory genes were up-regulated by methionine, others were inhibited and further conclusions should be carefully taken. In contrast, tryptophan effects on pro-inflammatory transcripts and RB revealed a general inhibitory pattern which, together with high production of brain monoamine and cortisol, seems to point out tryptophan as key mediator of the neuroendocrine and immune systems cooperation. Overall, more studies are needed to ascertain the role of these AA in modulating fish immune and neuroendocrine responses.

