

Efecto de la hormona 11-deoxicorticosterona (DOC) en branquias de truchas arcoíris juveniles

R. Zuloaga^{1,3*}, L. Ahumada-Langer², J.E. Aedo⁴, A. Molina^{2,3} y J.A. Valdés^{2,3}

¹ Programa de Doctorado en Biotecnología, Facultad de Ciencias de la Vida, Universidad Andres Bello, Santiago, Chile

² Departamento de Ciencias Biológicas, Facultad de Ciencias de la Vida, Universidad Andres Bello, Santiago, Chile

³ Interdisciplinary Center for Aquaculture Research (Incar), Chile.

⁴ Departamento de Biología y Química, Facultad de Ciencias Básicas, Universidad Católica del Maule, Talca, Chile

*rodrigo.zuloaga.r@gmail.com

Arterbery, A., Fergus, D., Fogarty, E., Mayberry, J., Deitcher, D., Lee Kraus, W. & Bass, A. 2011. Evolution of ligand specificity in vertebrate corticosteroid receptors. *BMC Evol. Biol.*, 11:1-15.

Baker, M. 2003. Evolution of Glucocorticoid and Mineralocorticoid Responses: Go Fish. *Endocrinol.*, 144: 4223-4225.

Baker, M. & Katsu, Y. 2019. Chapter Two - Evolution of the Mineralocorticoid Receptor. *Vitamins and Hormones*, Editor(s): Gerald Litwack, Elsevier: Amsterdam, The Netherlands, 109: 17-36.

Barton, B. 2002. Stress in fishes: a diversity of responses with particular reference to changes in circulating corticosteroids. *Integr. Comp. Biol.*, 42: 517-525.

Ciji, A., & Akhtar, M. 2021. Stress management in aquaculture: a review of dietary interventions. *Rev Aquac.*, 13: 2190-2247.

FAO. 2022. The State of World Fisheries and Aquaculture 2022. Towards Blue Transformation. Rome, FAO.

Fridman, S. 2020. Ontogeny of the Osmoregulatory Capacity of Teleosts and the Role of Ionocytes. *Front. Mar. Sci.*, 7: 709.

Kiilerich, P., Pedersen, S., Kristiansen, K. & Madsen, S. 2011. Corticosteroid regulation of Na⁺, K⁺-ATPase α 1-isoform expression in Atlantic salmon gill during smolt development. *Gen. Comp. Endocrinol.*, 170: 283-289.

Kiilerich, P., Servili, A., Péron, S., Valotaire, C., Goardon, L., Leguen, I. & Prunet, P. 2018. Regulation of the Corticosteroid Signalling System in Rainbow Trout HPI Axis during Confinement Stress. *Gen. Comp. Endocrinol.*, 258: 184-193.

McCormick, S., Regish, A., O'Dea, M. & Shrimpton, J. 2008. Are we missing a mineralocorticoid in teleost fish? Effects of cortisol, deoxycorticosterone and aldosterone on osmoregulation, gill Na⁺, K⁺-ATPase activity and isoform mRNA levels in Atlantic salmon. *Gen. Comp. Endocrinol.*, 157: 35-40.

Milla, S., Terrien, X., Sturm, A., Ibrahim, F., Giton, F., Fiet, J., Prunet, P. & Le Gac, F. 2008. Plasma 11-Deoxycorticosterone (DOC) and Mineralocorticoid Receptor Testicular Expression during Rainbow Trout *Oncorhynchus Mykiss* Spermiation: Implication with 17 α , 20 β -Dihydroxyprogesterone on the Milt Fluidity? *Reprod. Biol. Endocrinol.*, 6: 19.

Mu, Y., Li, W., Wei, Z., He, L., Zhang, W. & Chen, X. 2020. Transcriptome analysis reveals molecular strategies in gills and heart of large yellow croaker (*Larimichthys crocea*) under hypoxia stress. *Fish Shellfish Immunol.*, 104: 304-313.

Naderi, M., Keyvanshokoo, S., Ghaedi, A. & Salati, A. 2018. Effect of acute crowding stress on rainbow trout (*Oncorhynchus mykiss*): a proteomics study. *Aquac.*, 495: 106-114.

Rehman, S., Gora, A., Ahmad, I., & Rasool, S. 2017. Stress in aquaculture hatcheries: source, impact and mitigation. *Int. J. Curr. Microbiol. Appl. Sci.*, 6: 3030-3045.

Schreck, C. B. & Tort, L. 2016. The concept of stress in fish. In *Fish physiology*. Academic Press, 35: 1-34.

Soengas, J., Sangiao-Alvarellos, S., Laiz-Carrión, R. & Mancera, J. 2007. Energy metabolism and osmotic acclimation in teleost fish. In: *Fish Osmoregulation*. 1st Edition, CRC Press, 277-307.

Sturm, A., Bury, N., Dengreville, L., Fagart, J., Flouriot, G., Rafestin-Oblin, M. & Prunet, P. 2005. 11-deoxycorticosterone is a potent agonist of the rainbow trout (*Oncorhynchus mykiss*) mineralocorticoid receptor. *Endocrinol.*, 146: 47-55.

Wu, C., Lee, T. & Tseng, D. 2003. Glucocorticoid Receptor Mediates Cortisol Regulation of Glycogen Metabolism in Gills of the Euryhaline Tilapia (*Oreochromis mossambicus*). *Fishes*, 8: 267.