

Mauro Chivite Alcalde

University of Vigo

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Orientation: SUSTAINABLE USE OF MARINE RESOURCES

Specialization Area: Aquaculture

Research Area: 2.10 Animal welfare



PhD project: Role of brain monoaminergic systems (catecholamines and serotonin) in feeding behavior and its modulation by stress in teleost fish.

Supervisors: Dr. Jesús M. Míguez Miramontes (Universidade de Vigo)

Summary: The action of monoamines in the regulation of eating behaviour is very broad, affecting various aspects such as social and hierarchical behaviour, aggression, reward effect and the regulation of appetite and satiety. In fish, previous studies have shown that monoamines basically exert an anorectic action, involving specific receptors that mediate dopamine and serotonin responses. In addition, situations that generate stress in fish seem to be under the control of the monoaminergic system. The aim of this PhD thesis was to investigate the role of brain monoaminergic systems in the regulation of feeding behaviour in teleost fish and the negative influence of stress. The results obtained demonstrate that central monoaminergic systems consist of complex neural networks that modulate different aspects of behaviour in a tissue-dependent manner. Evidence suggests that both serotonin and dopamine modulate eating behaviour by inhibiting food intake. Furthermore, we observed that forebrain dopamine appears to be linked to processes related to reward behaviour, while diencephalic dopamine acts in the homeostatic control of intake. Moreover, Serotonin has been shown to play a central role in the activation of the stress axis, although the anorectic effect of stress does not appear to be mediated by this indolamine. These data indicate that independent serotonergic neuronal systems may be modulating different behavioural aspects, thus suggesting a high degree of complexity.

