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CADMIUM EXPOSURE AFFECTS THE EXPRESSION OF GENES INVOLVED IN SKELETOGENESIS AND STRESS RESPONSE IN GILTHEAD SEA BREAM LARVAE

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Gilthead sea bream larvae (*Sparus aurata*) were used as model system to investigate cadmium (Cd²⁺) effects on the expression of genes involved in detoxification, stress response and ossification processes (metallothionein-*mt*, glutathione peroxidase 1-*gpx1*, heat shock protein 70-*hsp70*, tumor necrosis factor γ -*tnf* γ and bone gamma-carboxyglutamate protein or osteocalcin-*oc*). Larvae aged 47 days post hatching (dph) were exposed for 72 hours at 0.1 to 20 mg/L of Cd²⁺ in order to evaluate the median lethal concentration (LC50) for this metal, which was determined at 15.32 mg/L. Specimens of the same age were exposed to several sublethal Cd²⁺ concentrations (0, 0.1, 5 and 10 mg/L) during 6 days in order to investigate the effects of gradient levels of Cd²⁺ on the expression of target genes. The short term effects of graded levels of Cd²⁺ on the expression of *mt*, *gpx1*, *hsp70*, *tnf* γ and *oc* in gilthead sea bream larvae were level and/or gene dependent. Considering the results regarding *gpx1* and *hsp70* gene expression, Cd²⁺ at any of the tested levels (0.1, 5 and 10 mg/L) did not induce oxidative stress in gilthead sea bream larvae, whereas levels of *mt* gene expression were increased at 5 and 10 mg/L of Cd²⁺ probably to detoxify this metal excess. The expression of *tnf* γ was not level dependent and was down regulated in larvae exposed to 5 and 10 mg/L of Cd²⁺. At those concentrations, *oc* expression was down regulated suggesting a disruption in bone mineralization. Results from this study provided insights in some molecular mechanisms underlying Cd²⁺ induced toxicity in fish during early stages of development. Results of *oc* expression were also of special relevance to understand the possible involvement manner of metals in skeletal disorders.
Mots clés: Cadmium, *Sparus aurata*, *mt*, *gpx1*, *hsp70*, *tnf* γ , *oc*

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ISOLATION OF FLAVONOIDS FROM METHANOL EXTRACT OF ASTRAGALUS GOMBIFORMIS POMEL

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Research of natural antioxidant compounds has received substantial attention in the last decades. Some *Astragalus* species have antioxidant potential and are medicinal plants. In this context, our previous work (presented on GA2011, Turkey) showed that aerial part methanol extract of *Astragalus gombiformis* exhibited phenolic and antioxidant potential. The aim of this study was to isolate the flavonoic compounds from this extract. Methanol extract was firstly screened by analytic HPLC and LC-MS/MS and then purified with preparative HPLC and Sephadex column. Pure fractions were analyzed by NMR to identify the isolated compounds. Some compounds were isolated and characterized. These products were flavonoids based in quercetin and kaempferol. The role of these flavonoids identified in *A. gombiformis* (medicinal use,?) and the relationship structure-activity were discussed. Our results showed that *A. gombiformis* can be a candidate for antioxidant molecules source. Currently, our studies are focused on the evaluation of antioxidant activity of characterized molecules and the isolation and identification of others compounds.

Mots clés: flavonoids, antioxidant, *Astragalus gombiformis*