

## Chronic saline exposures interfere with basal and induced immunity in striped catfish (*Pangasianodon hypophthalmus*, Sauvage) exposed to virulent strain of *Edwardsiella ictaluri*.

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**Abstract :** Hyperosmotic stress has often been investigated from osmoregulation perspectives while the effects of such stress on the immune capacity remain largely unexplored. In this study, stenohaline striped catfish *Pangasianodon hypophthalmus* were submitted to gradual hyperosmotic stress during 20 days up to 10 and 20 ppt. Hyperosmotic stress was followed by an infection with a highly virulent strain of an intracellular gram negative bacteria, *Edwardsiella ictaluri*, responsible for Enteric Septicemia of Catfish (ESC). Osmoregulatory (i.e. plasma osmolarity and Na<sup>+</sup>K<sup>+</sup> ATPase activity), immune (i.e. lysozyme, complement, respiratory burst, white blood cells, heat shock protein and high-mobility group B1 protein) parameters and mortality rates were monitored. Moreover, a label free quantitative proteomics workflow was performed to study how salinity affects the proteome of kidney in healthy and infected catfish. The flow consisted in initial global profiling of relative peptide abundances (by LC/MS, peak area quantification based on extracted ion currents) followed by MS/MS identification. In total, 496 differentially expressed proteins were analyzed in DAVID interface to isolate functional pathways and categories involved in the response to bacterial infection and which were influenced by salinity changes. Pathways and functional categories, particularly those related to stress, immunity and ion homeostasis, are discussed. We hypothesized that prolonged exposure to mild and high hyperosmotic stress may induce chronic sterile inflammation and disruption of immune homeostasis that may lead to excessive inflammatory response and serious ESC disease.

**Keywords:** *Pangasianodon hypophthalmus*, salinity, infectious disease, immunity, osmoregulation, proteomics.