

Overall, current research shows that yellowfin seabream salinity tolerance is best understood as an integrated phenotype linking ecology, growth, endocrine response, immunity, and host-microbiota interactions.

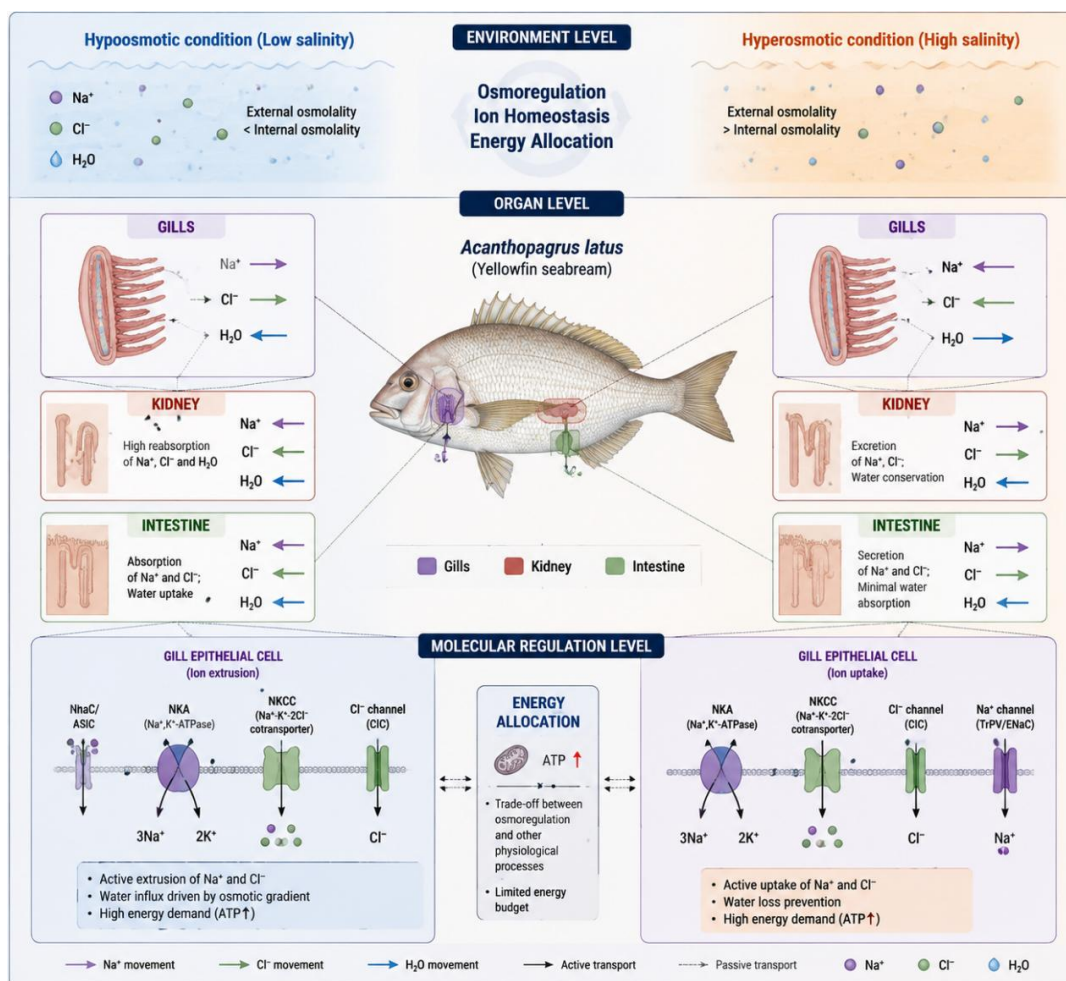


Figure 1 Multi-organ osmoregulatory mechanisms involved in salinity adaptation of euryhaline fish

3 Effects of Seawater Salinity Variation on Growth Performance of Yellowfin Seabream

3.1 Effects of salinity on growth rate and weight gain performance

Salinity variation directly affects growth rate and weight gain in yellowfin seabream, but the response is clearly nonlinear rather than monotonic. In a 56-day trial on juvenile *Acanthopagrus latus*, growth improved when salinity increased from 6‰ to 12‰, whereas further elevation beyond 24‰ suppressed growth, indicating that moderate brackish conditions support better performance than either lower or higher salinity extremes (Mozanzadeh et al., 2021). An earlier acclimation study reached a similar conclusion, showing that juveniles achieved their highest growth at 7 and 15 g/L, while fish transferred to 23 and 30 g/L exhibited poorer performance and even negative growth during the early stage after transfer. These results show that yellowfin seabream can tolerate broad salinity ranges, but its best growth occurs within a narrower intermediate window.

This pattern is consistent with evidence from other euryhaline fishes, where the best growth commonly appears near species-specific isosmotic or low-cost osmoregulatory conditions. In juvenile black sea bream, a closely related sparid, 15 psu was identified as the most favorable salinity for economic culture, with improved feed conversion and low oxidative burden compared with full-strength seawater. Comparable work in Asian seabass also found that intermediate salinity produced the highest weight gain and specific growth rate, whereas both hypo-saline and hyper-saline conditions reduced growth performance (Hassan et al., 2022). Mechanistically, these trends support the view that when salinity departs too far from the physiological optimum, more energy is diverted toward osmoregulation and less remains available for somatic growth.