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2.5. Quantitative reverse-transcription PCR (qRT-PCR) verification

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3. Results

3.1. Hemolymph osmolality under salinity stress

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3.2. Gill transcriptome

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3.4. *C. nippona* mitochondrial apoptosis pathway analysis

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4. Discussion

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“caspase pathway” elements have shown that aquatic animals rely on channels in membranes to sense environmental stresses. In the oyster *Crassostrea gigas*, the immune system is highly sensitive to environmental stresses as a protection from pathogenic stresses. Apoptosis is the important immune mechanism of oysters in a timely response to environmental stress which has been noticed to lay important roles in *C. gigas*. In the clam *Cyclina sinensis*, it is initiated and transmits the intrinsic mitochondrial pathway to the extrinsic pathway. Environmental stresses such as low salinity stress have been confirmed to activate the mitochondrial pathway in molluscs. The proapoptotic and prosurvival members of the caspase family are the central elements in the absence of only homologous elements in aquatic oyster *C. gigas*. The main clam itaeshi in a main

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