Making the otolith magnesium chemical calendar-clock tick - DTU Orbit (18/11/2018)

Making the otolith magnesium chemical calendar-clock tick: Plausible Mechanism and Empirical Evidence

The incorporation of a number of readily measured trace elements into otoliths is considered to be under some sort of physiological control, but rarely are explicit mechanisms proposed. Studies of the incorporation of the trace element magnesium reveal that in some taxa there exists strong seasonal patterning, taking on the characteristics of a "chemical calendar-clock." However, Mg/Ca and the isotopic ratio $^{26}\text{Mg}/^{24}\text{Mg}$ are less "clock-like" in taxa that are not as metabolically active. Herein, it is hypothesized that Mg uptake and incorporation are related to metabolic activity. Further, a two-step process of Mg incorporation is proposed: (1) limited entry into the otolith-bearing chamber through ion channels and (2) association with water-soluble proteins within the chamber. Supporting data from a range of taxa and life histories are provided; the authors’ aim is to stimulate discussion and encourage physiologists to test these and alternative mechanistic hypotheses.

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Oceans and Arctic, SUNY Albany, Swedish University of Agricultural Sciences, NOAA, Technical University of Denmark
Contributors: Limburg, K. E., Wuenschel, M. J., Hüssy, K., Heimbrand, Y., Samson, M.
Pages: 479-493
Publication date: 2 Oct 2018
Peer-reviewed: Yes

Publication information
Journal: Reviews in Fisheries Science and Aquaculture
Volume: 26
Issue number: 4
ISSN (Print): 2330-8249
Ratings:
Web of Science (2018): Indexed yes
Scopus rating (2017): CiteScore 3.83 SJR 1.182 SNIP 2.25
Web of Science (2017): Impact factor 4.75
Web of Science (2017): Indexed yes
Scopus rating (2016): CiteScore 2.23 SJR 0.81 SNIP 1.175
Web of Science (2016): Impact factor 2.545
Scopus rating (2015): CiteScore 1.1 SJR 1.02 SNIP 1.16
Web of Science (2015): Impact factor 1.143
Scopus rating (2014): SJR 1.069 SNIP 1.354
Web of Science (2014): Impact factor
Scopus rating (2013): SJR 1.391 SNIP 1.58
Scopus rating (2012): SJR 0.956 SNIP 1.232
Scopus rating (2011): SJR 1.022 SNIP 1.123
Scopus rating (2010): SJR 0.973 SNIP 1.312
Scopus rating (2009): SJR 0.984 SNIP 0.897
Scopus rating (2008): SJR 1.102 SNIP 1.348
Scopus rating (2007): SJR 1.059 SNIP 0.908
Scopus rating (2006): SJR 1.151 SNIP 1.45
Scopus rating (2005): SJR 1.18 SNIP 2.286
Scopus rating (2004): SJR 0.64 SNIP 1.459
Scopus rating (2003): SJR 0.744 SNIP 1.639
Scopus rating (2002): SJR 0.637 SNIP 1.329
Scopus rating (2001): SJR 0.79 SNIP 1.702
Scopus rating (2000): SJR 1.026 SNIP 1.041
Scopus rating (1999): SJR 1.044 SNIP 1.802
Original language: English
Keywords: chemical calendar-clock, conceptual model, metabolic proxy, mg incorporation, Otolith Mg/Ca
DOIs:
10.1080/23308249.2018.1458817
Source: Scopus
Source-ID: 85047905767
Research output: Research - peer-review › Review – Annual report year: 2018