OMICS Group Conferences
Accelerating Scientific Discovery

World Congress on
Endocrinology

August 26-28, 2013 DoubleTree by Hilton, Raleigh, NC, USA

Plasma melatonin response to photo manipulation in arctic char *(Salvelinus alpinus)*

Kjell J. Nilssen[1] and Saumen K. Maitra[2]
[1]Norwegian University, Norway
[2]Visva-Bharati University, India

The diadromous char (*Salvelinus alpinus*) improves its energy availability by leaving the high Arctic hyper-oligotrophic lakes to avail ample marine food resources during summer. Preparation for the seawater stay involves a number of changes known as smoltification. An increase in day-length is considered as the main stimulus and pineal hormone melatonin as the physiological messenger of photic cue. However, the hypothesis was not tested in this species. Accordingly, present study aimed at measurement of diel plasma melatonin titers following changes in photoperiod or spectral compositions of light. The results from short day exposure revealed a pulsating melatonin release during the dark phase followed by a hormonal low during the light-phase. A significant plasma melatonin decrease was also true if darkness was followed by exposure to light spectra within the blue, green or red colors. When photoperiod was extended, the initial melatonin drop was followed by an increase in the late light-phase. Chars subjected to continuous darkness (DD) exhibited a pulsating plasma melatonin pattern. Thus it is concluded that the diadromic Arctic char can keep track of time by pineal melatonin release indifferent of photic spectral exposure. The inhibitory effects of low intensity red light demonstrated the keen photo sensitivity of the pineal receptors. This is in accordance with the animals need to initiate the smoltification under thick ice and snow cover in order to time its hypo-osmoregulatory development. The cyclic melatonin release under DD, and an increase in plasma melatonin during extended day-length, may indicate a complex pineal secretory activity.

Biography

Kjell J. Nilssen obtained his Ph.D. from Dept. of Arctic Biology, University of Tromsø. He has been in charge of the aquaculture section at NTNU and executed more than 50 scientific field expeditions to the high Arctic and the Himalayas. He has published more than 100 scientific papers and technical reports ranging from comparative endocrinology to fish farm constructions.

kjell.nilssen@ntnu.no