

## Increasing levels of dietary crystalline methionine affect plasma methionine profiles, ammonia excretion, and the expression of genes related to the hepatic intermediary metabolism in rainbow trout (*Oncorhynchus mykiss*) - DTU Orbit (08/11/2017)

### Increasing levels of dietary crystalline methionine affect plasma methionine profiles, ammonia excretion, and the expression of genes related to the hepatic intermediary metabolism in rainbow trout (*Oncorhynchus mykiss*)

Strictly carnivorous fish with high requirements for dietary protein, such as rainbow trout (*Oncorhynchus mykiss*) are interesting models for studying the role of amino acids as key regulators of intermediary metabolism. Methionine is an essential amino acid for rainbow trout, and works as a signalling factor in different metabolic pathways. The study investigated the effect of increasing dietary methionine intake on the intermediary metabolism in the liver of juvenile rainbow trout. For this purpose, five diets were formulated with increasing methionine levels from 0.60 to 1.29% dry matter. The diets were fed in excess for six weeks before three sampling campaigns carried out successively to elucidate (i) the hepatic expression of selected genes involved in lipid, glucose and amino acid metabolism; (ii) the postprandial ammonia excretion; and (iii) the postprandial plasma methionine concentrations. The transcript levels of enzymes involved in lipid metabolism (fatty acid synthase, glucose 6 phosphate dehydrogenase and carnitine palmitoyl transferase 1 a), gluconeogenesis (fructose-1,6-biphosphatase) and amino acid catabolism (alanine amino transferase and glutamate dehydrogenase) were significantly affected by the increase in dietary methionine. Changes in gene expression reflected to some extent the decrease in ammonia excretion ( $P=0.022$ ) and in the hepatosomatic index (HSI); P

#### General information

State: Published

Organisations: National Institute of Aquatic Resources, Section for Aquaculture, BioMar A/S

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Pages: 91-99

Publication date: 2016

Main Research Area: Technical/natural sciences

#### Publication information

Journal: Comparative Biochemistry and Physiology. Part B: Biochemistry & Molecular Biology

Volume: 198

ISSN (Print): 1096-4959

Ratings:

BFI (2017): BFI-level 1

Web of Science (2017): Indexed Yes

BFI (2016): BFI-level 1

Scopus rating (2016): SJR 0.607 SNIP 0.787 CiteScore 1.7

Web of Science (2016): Indexed yes

BFI (2015): BFI-level 1

Scopus rating (2015): SJR 0.736 SNIP 0.775 CiteScore 1.69

Web of Science (2015): Indexed yes

BFI (2014): BFI-level 1

Scopus rating (2014): SJR 0.734 SNIP 0.745 CiteScore 1.87

BFI (2013): BFI-level 1

Scopus rating (2013): SJR 0.717 SNIP 0.979 CiteScore 2.11

ISI indexed (2013): ISI indexed yes

BFI (2012): BFI-level 1

Scopus rating (2012): SJR 0.678 SNIP 0.948 CiteScore 2

ISI indexed (2012): ISI indexed yes

Web of Science (2012): Indexed yes

BFI (2011): BFI-level 1

Scopus rating (2011): SJR 0.74 SNIP 0.91 CiteScore 2.14

ISI indexed (2011): ISI indexed yes

BFI (2010): BFI-level 1

Scopus rating (2010): SJR 0.631 SNIP 0.896

BFI (2009): BFI-level 1

Scopus rating (2009): SJR 0.591 SNIP 0.775

BFI (2008): BFI-level 1

Scopus rating (2008): SJR 0.577 SNIP 0.809

Scopus rating (2007): SJR 0.674 SNIP 0.845

Scopus rating (2006): SJR 0.632 SNIP 0.818

Scopus rating (2005): SJR 0.674 SNIP 0.824

Scopus rating (2004): SJR 0.71 SNIP 0.867

Scopus rating (2003): SJR 0.605 SNIP 0.827

Scopus rating (2002): SJR 0.458 SNIP 0.675

Web of Science (2002): Indexed yes

Scopus rating (2001): SJR 0.433 SNIP 0.639

Web of Science (2001): Indexed yes

Scopus rating (2000): SJR 0.494 SNIP 0.697

Scopus rating (1999): SJR 0.447 SNIP 0.62

Original language: English

Amino acid catabolism, Lipid metabolism, Gluconeogenesis, Crystalline amino acid, Hepatosomatic index, Hepatic gene expression

DOIs:

10.1016/j.cbpb.2016.04.006

Source: FindIt

Source-ID: 2304028518

Publication: Research - peer-review › Journal article – Annual report year: 2016