In vitro modulation of Drimys winteri bark extract and the active compound polygodial on Salmo salar immune genes after exposure to Saprolegnia parasitica

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The rapid development of the aquaculture industry has global concerns with health management and control strategies to prevent and/or treat diseases and increase sustainability standards. Saprolegniosis is a disease caused by Saprolegnia parasitica, and is characterized by promoting an immunosuppression in the host. This study evaluated in vitro the extract and one active compound (polygodial) of Drimys winteri, a Chilean medicinal tree as a potential early immunostimulatory aid in Saprolegniosis control. Atlantic salmon (Salmo salar) head kidney cells (ASK-1) were incubated with both extract and pure polygodial before exposure to S. parasitica mycelium, and the expression of the immune-related genes interleukin 1? (IL-1?), interferon ? (IFN?), and major histocompatibility complex II (MHCII) was evaluated. Both evidenced immunomodulatory capacities by increasing gene expressions. This immunomodulation related to a mitigatory action counteracting the immunosuppressing effects of S. parasitica. Despite that most immune-related genes were up-regulated, the down-regulation of MHCII, characteristic of S. parasitica infection, was lessened by pre-incubation with the compounds. This study provides the first insight on the potential of D. winteri bark extract as a possible immunomodulatory and defensive strategy against this

oomycete infection in fish. © 2016

D. winteri

Gene expression

Immunostimulant

In vitro

Polygodial

S. parasitica

Saprolegniosis

plant extract

polygodial

sesquiterpene

analysis

animal

animal food

bark

chemistry

diet

Drimys

fish disease

immunology

infection

microbiology

physiology

Salmo salar

Saprolegnia

veterinary

Animal Feed

Animals

Diet

Drimys

Fish Diseases

Infection

Plant Bark

Plant Extracts

Salmo salar

Saprolegnia

Sesquiterpenes