

Effect of Flavonoid Rutin on Glycemia and its Regulatory Hepatic Enzymes in Gilthead Seabream (*Sparus aurata*)

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Abstract

Nowadays, plant protein alternatives and increasing aquafeed efficiency are accentuated. In the present study the effects of injecting different dosages and chemical types of flavonoid rutin on modulation of gilthead sea bream glycemia is studied in three consecutively distinct experiments. Fish were fed at 3% of their respective body weight twice a day with a diet containing 25% pre-gelatinized starch. Water temperature and photoperiod were adjusted near to 18°C and 12L: 12D, respectively. Glycemia and hepatic glucose metabolism enzymes were measured. Results showed that 100 mg/kg BW of both chemical types of rutin significantly decreased glycemia (209.30±34.44 mg/dl and 120.18±9.84 for control and rutin treated groups in non-water soluble rutin, respectively, 125.50±6.54 and 99.83±6.46 for control and rutin treated groups in water soluble product, respectively) concomitant with increasing hepatic glucokinase activity (1.77±0.22 U/g protein and 6.13±1.20 for control and rutin treated groups in non-water soluble rutin, respectively, 20.19±1.51 and 25.77±1.61 for control and rutin treated groups in water soluble product, respectively). However, the time required for rutin to show its hypoglycemic effect is shorter for non-water soluble product (6 hrs after rutin injection) than water soluble one (9 hrs after rutin injection). Results implied that it is possible to manipulate the carbohydrate metabolic machinery of gilthead sea bream using hypoglycemic phytochemicals (rutin) similar to laboratory rodent hyperglycemia models.

Keywords: Flavonoid rutin, hyperglycemia, glucokinase, gilthead seabream (*Sparus aurata*)

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