



# EFFECTS OF ORAL ADMINISTRATION OF 17 $\alpha$ -ETHYNYLESTRADIOL ON MALE SEABREAM *Sparus aurata* L.

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## ABSTRACT

The effects of 17 $\alpha$ -ethynylestradiol (EE2) on immature and mature males of the gilthead seabream (*Sparus aurata* L.) were studied. Gilthead seabream specimens were fed for 1 month with diets containing EE2 (5, 50, 125, 200  $\mu$ g/g food). EE2 exposure altered the appetite, survival and digestive system in immature fish, and caused changes in the gonadal development, growth, survival, and some somatic indexes in mature males. The highest EE2 doses showed acute toxic effects (50% mortality) and liver injury. Gonad size was also drastically reduced.

## MATERIALS AND METHODS

Two experiments were performed:



i) Immature males

n=400, Age: 14 months, Weight: 80 g, T<sup>a</sup>: 23.4-27.1°C



ii) Mature males

n=400, Age: 19 months, Weight: 320g, T<sup>a</sup>: 14.6-17.8°C

EE2 incorporation in the commercial food.

Doses of 5, 50, 125 and 200  $\mu$ g.g.<sup>-1</sup>.

Method of ethanol evaporation (0.3 l ethanol.kg.<sup>-1</sup> food, 24 hours)

Three times a day at satiation for 1 month.

## INTRODUCTION

17 $\alpha$ -ethynylestradiol (EE2) is a synthetic estrogen present in the aquatic environment at biologically active concentrations (Kidd et al. 2007). The most common effects produced by EE2 in fish include alteration of the reproductive process, changes in normal growth performance, irregular behaviour, metabolic modifications and endocrine disruptions (Filby et al. 2007). This study aims to determine the effect of EE2 administered with the food to specimens of gilthead seabream (*Sparus aurata* L.) and the concentrations which will be able to generate problems in the production of this specie of interest in aquaculture.



2 m<sup>3</sup> Tanks

## RESULTS

### Immature fish

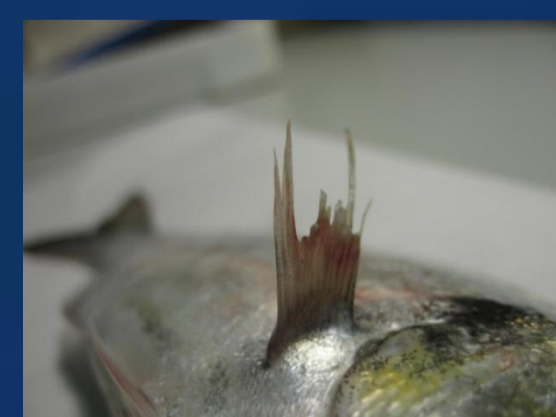
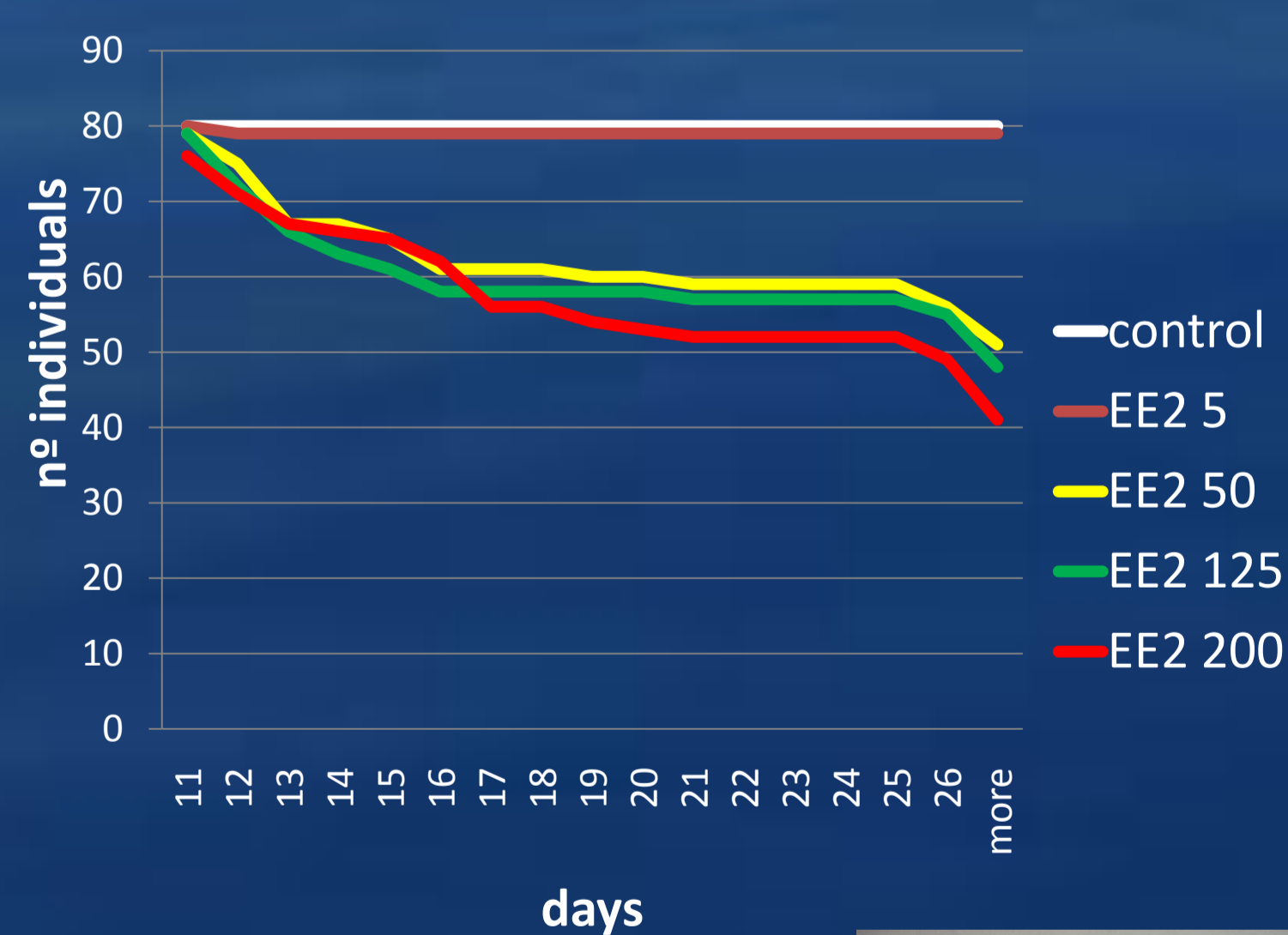
#### EE2 effects

Loss of appetite

Mortality

Skin injuries, fin rot, enlarged spleen, degeneration of the liver and digestive tract

Survival of immature fish



### Mature fish

#### EE2 effects

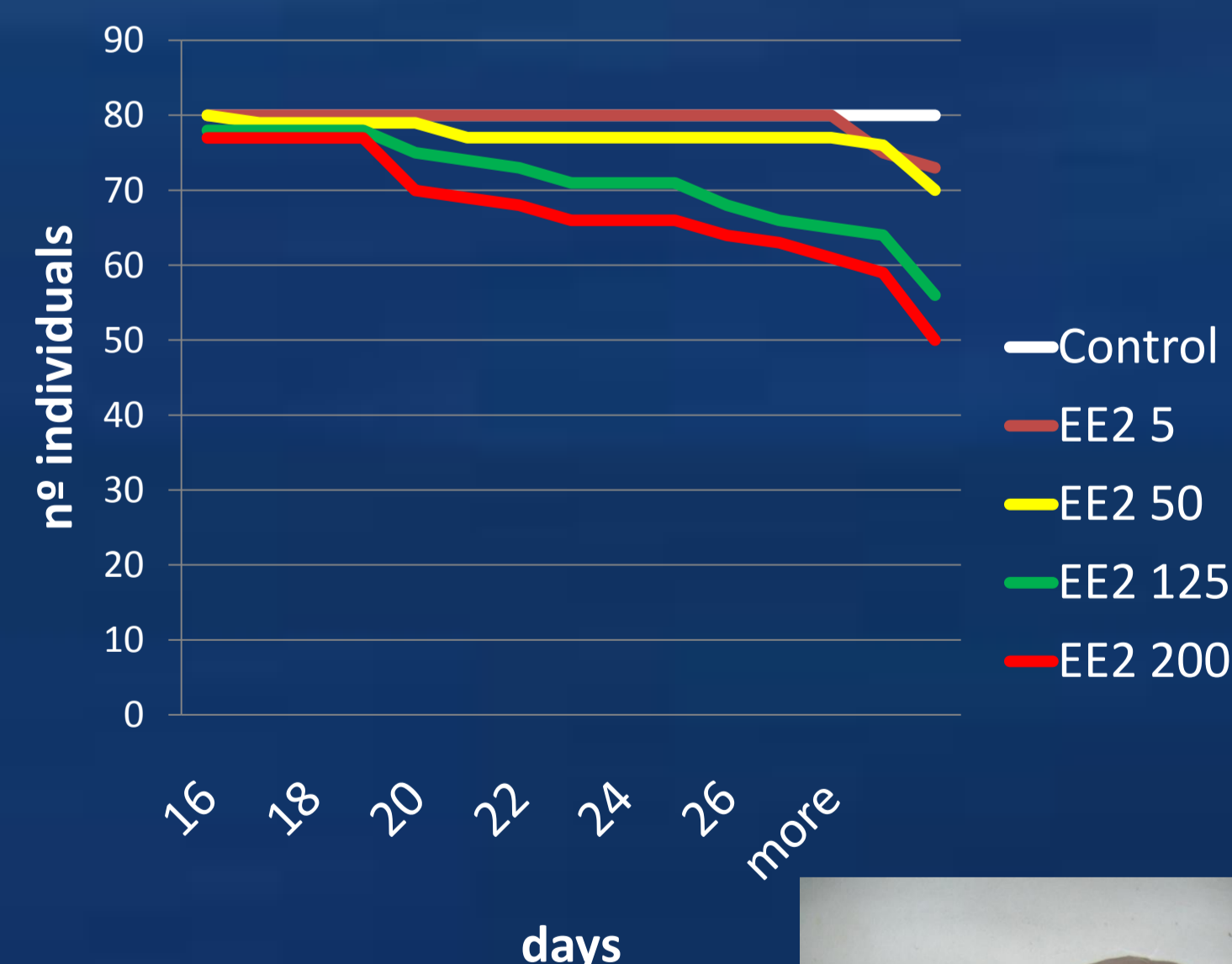
Smaller concentration and less mobility of spermatozoa

Mortality

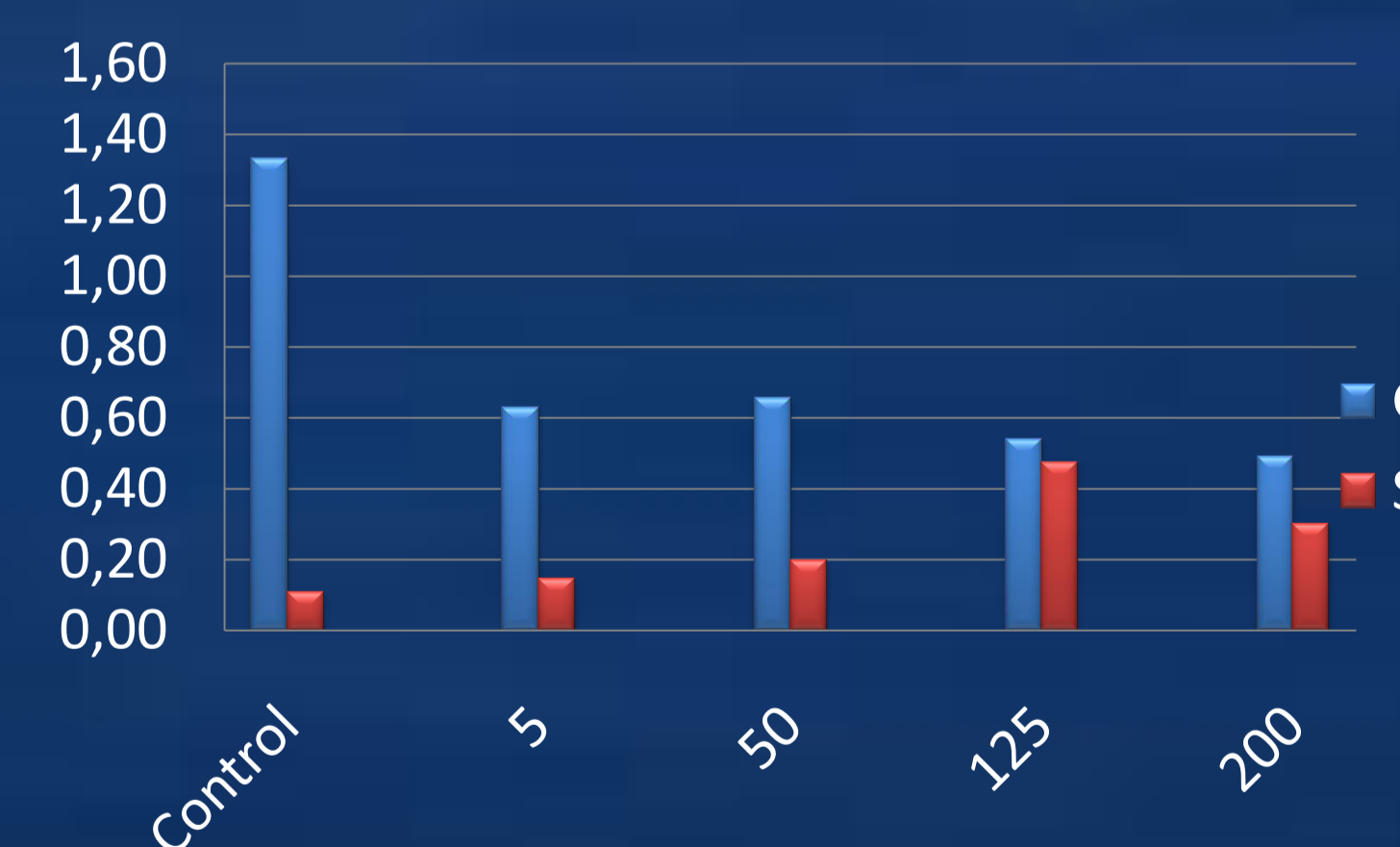
Enlarged spleen (Spleensomatic index, SSI), degeneration of the liver and digestive tract, ascitis

Gonadal degeneration, Gonadosomatic index (GSI)

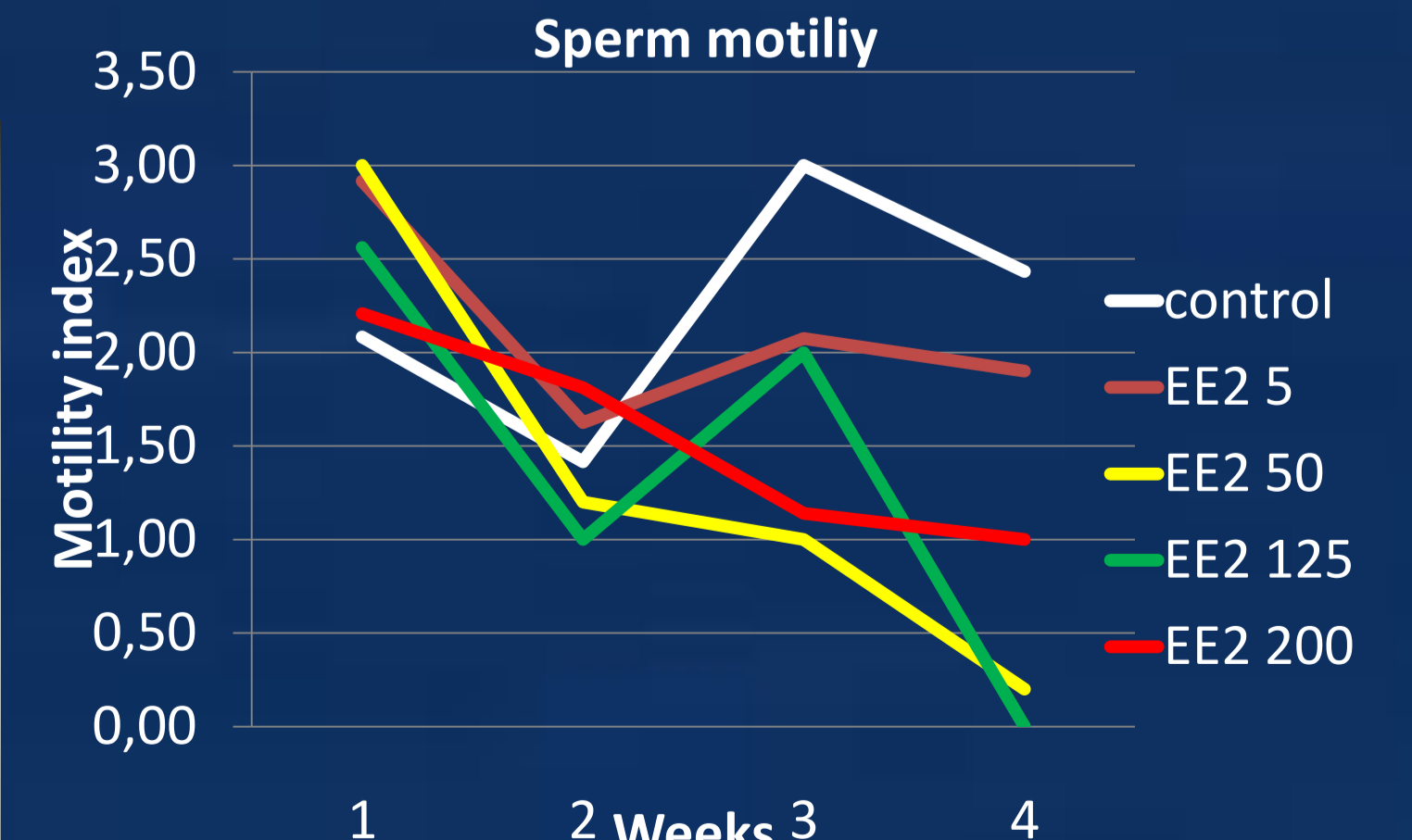
Survival of mature fish



GSI-SSI



Sperm motility



**CONCLUSION:** EE2 oral administration in seabream causes deleterious effects on survival, metabolism and gonadal development. The presence of this chemical in the environment can affect the aquaculture production of this species.

## ACKNOWLEDGEMENTS

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