PLANT BASED EXTRACTS SHOW STRESS ATENUATION PROPERTIES IN VACCINATED SEA BASS (*Dicentrarchus labrax*)

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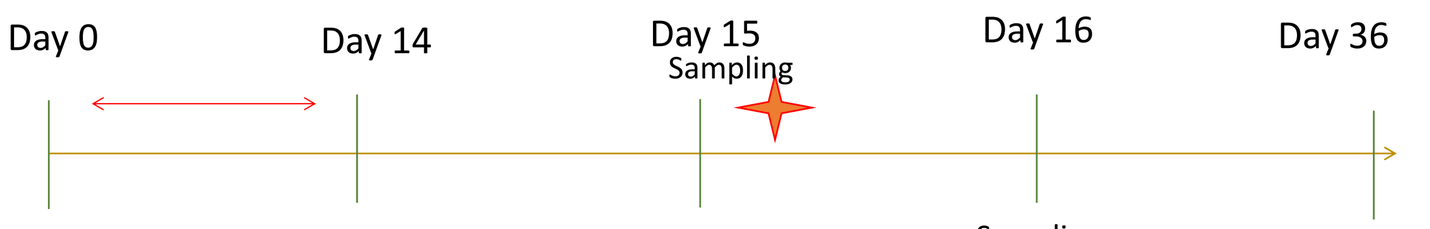
Introduction

Vaccination is the most powerful and safe prophylactic method to avoid disease outbreaks in fish, but the administration of vaccines can generate an episode of stress and the resulting transient lack of health status and welfare. This work aimed first, to determine the stress, health, and welfare conditions of fish during this critical point in the production process, and secondly, to determine the attenuation capacity of plant extracts previously administered to the vaccination process.

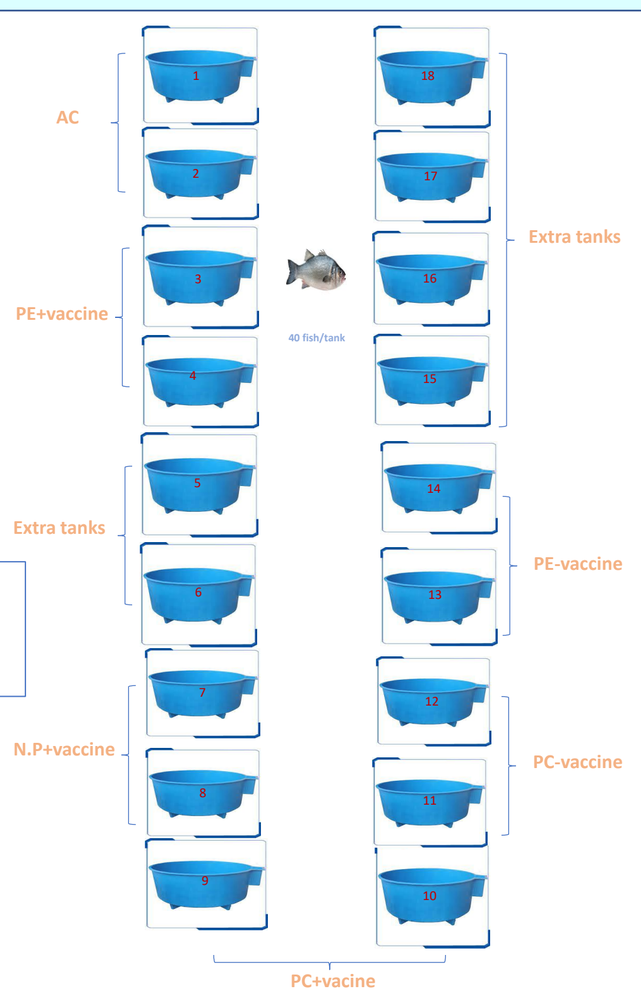
Materials and Methods



- **Stocking** the fish
- **Average weight**: 9-11 g
- **Number** of fish:40/tank
- **Number of tanks**: 2 per group

- Fish treatment with Stress mitigation product.
- Treatment duration: 10 min
- Vaccination.

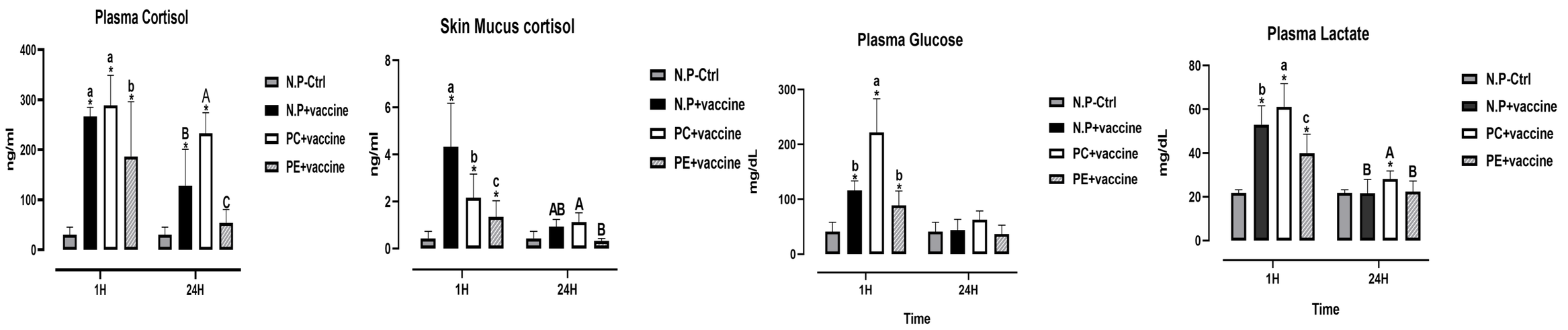
Tank volume: 100 L
Stock density: 9-10 kg m-3
Fish weight: 9-11 g
Total fish: 480 (25 fish extra/tank)
Product: stress mitigators (TECNOVIT) based on carvacrol and thymol
Product concentration: 30 ppm for 10 min.
Vaccination. Immersion vaccination. ICTHIOVAC® VR/PD trivalent
Number of fish/sample: 10 (5 fish for duplicate tanks)



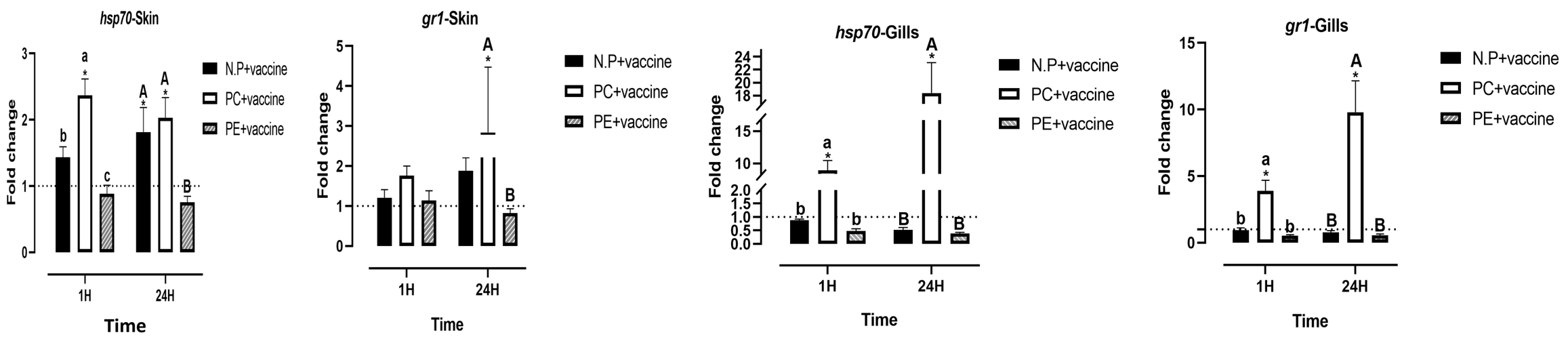
AC= Absolute control
PC, PE= Products
N.P= No product

Results

Cortisol (plasma and mucus) plasma glucose and lactate



Stress transcript response in peripheral mucosal tissues (skin and gills)



PC: Control, vaccination without atenuation products. PC: Product C plus vaccine PE: Product E plus vaccine

Discussion and Conclusions

The results showed that product E (Carvacrol and Thymol) reduced the concentration of cortisol both in plasma and mucus in face of a vaccination. Similarly, plasma glucose and lactate showed reduced values. Regarding genes associated to the short-time stress response expression of *hsp70* and *gr1*, it can be observed that product E also shows less sensitivity to the vaccination effect in both the skin and gill tissues, the ones under most direct contact with the attenuating products. In particular, whereas the effect of product E is clear in both tissues, product C shows less consistency.
Overall, the results indicate that a pre-treatment with a specific product based on carvacrol and thymol plant extract administered just prior a vaccination episode, positively influences health and welfare indicators of fish under aquaculture conditions and this administration can be a recommended procedure when fish undergo to a vaccination process.

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