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## Impact of plant-based diets on the osmoregulation capacity in the sea bass [i]Dicentrarchus labrax[/i]

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*Abstract:* Although several biomarkers are often used to evaluate the potential endocrine disrupting effects of chemicals and waste streams, the relationship between responses in these biomarkers and population effects is not known. Short-term adult fish reproductive tests provide the opportunity to examine the relationship between functional endpoints such as egg production (a whole-organism endpoint intuitively linked with population level responses) and biomarkers that are commonly used in field studies (sex steroids, vitellogenin (VTG) and gonad size). Data were collected from short-term reproductive tests to assess the relationships between biomarkers and egg production, and the ability to use these quantitative relationships to predict population level responses based on modeling. Quantitative relationships between biomarkers and egg production were found, regardless of MOA or species examined. Egg production showed significant relationships to 17 $\beta$ -estradiol (E2), changes in female VTG levels, and female gonad size. However, use of these quantitative relationships to predict population-level effects are cautioned because of high levels of uncertainty. This study is the first to demonstrate that there are quantitative relationships among biomarkers, regardless of fish species used or the MOA of contaminants.

#### IMPACT OF PLANT-BASED DIETS ON THE OSMOREGULATION CAPACITY IN THE SEA BASS DICENTRARCHUS LABRAX

Boulo, V., Corbarieu, A., Châtain, B., Vandeputte, M. , and Charmantier, G.

*Symposium:* Physiology of fish in aquaculture *Presentation:*Poster

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*Abstract:* Fish farming production has markedly increased in the past years. Food for aquacultured fish mostly originates from wild-caught pelagic fish species, whereas wild fish stocks decline. Thus, the sustainable development of aquaculture needs alternative sustainable diet resources. Plant-based diets appear as interesting alternatives. However, according to the plant fatty acid composition, the permeability and fluidity of cell membranes might be modified, leading to potential physiologic troubles, particularly regarding osmoregulation. Physiological, cellular and molecular approaches were combined to determine the impact of plant-based diets on osmoregulatory capabilities and mechanisms in sea bass juveniles. In fish reared in seawater (38‰) and fed a vegetal diet, blood osmolality was significantly higher (360–420 mOsm/Kg) than in control-fed fish (310–350 mOsm/Kg), showing a decrease in hypo-osmoregulation. Immunolocalization of NKA revealed a significantly higher density of ionocytes in the filaments of gills from plant-fed fish. Differences in levels of NKA and CFTR transcripts were also observed.

#### IDENTIFICATION OF NUTRITIONALLY REGULATED GENES INVOLVED IN MYOGENESIS IN ATLANTIC SALMON

Bower, N.I., and Johnston, I.A.

*Symposium:* Muscle development and growth *Presentation:*oral

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*Abstract:* Myogenesis involves the regulated and coordinated expression of hundreds of genes with many still unidentified. We have used a genomics based approach to identify nutritionally-regulated genes involved in growth of fast skeletal muscle in Atlantic salmon (*Salmo salar* L.). Forward and reverse