

## Inclusion of intact *Saccharina latissima* to finishing lamb diet improved micronutrient content in the meat

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**Introduction:** Finishing lamb diet is used to improve carcass conformation and fatty acid composition. Inclusion of specific nutrients in finishing diet as a cutting-edge strategy improved nutrient composition of beef meat<sup>1</sup>. Brown seaweed is an interesting feed ingredient of North Atlantic Europe due to its richness with minerals (i.e. iodine and selenium)<sup>2</sup>. Therefore, our intention was to study the effect of wilted brown seaweed supplemented to finishing diet of Norwegian White lamb on iodine and selenium content in meat.

**Materials and Methods:** Sixteen female Norwegian White (NW) lambs (~40 kg) were randomly allocated to two diets: Control (CON; a total mixed ration (TMR) of grass silage, compound feed, barley and vitamin/mineral supplements) and control supplemented with wilted *Saccharina latissima* at 5% DM (SW). Lambs were given ad libitum access to the diets during 35 days pre-slaughter.

Sample: homogenized lean loin (*Longissimus thoracis*) and "flatbeef" (*Semimembranosus* and *Adductor*).

Selenium (Se): freeze dried sample was digested with 10% v/v ultrapure nitric acid in an UltraClave (Milestone) and analyzed on Agilent 8800 ICP-MS (Agilent Technology).

Iodine (I): extraction was performed on graphite block system (DigiPREP, SCP Science) with TMAH and analyzed on ICP-MS (Thermo XSeries II).

One-way ANOVA (Tukey post hoc test, MINITAB 18) was used.

**Results:** Finishing diet with seaweed (SW) significantly increased ( $P < 0.001$ ) selenium and iodine (16.9 and 72.2 µg/100 g of meat) content in meat homogenate compared to CON (14.9 and 2.1 µg/100 g of meat). Higher iodine contents were found in loin and selenium in "flatbeef" of SW lambs. Muscle type of NW lamb also affected mineral deposition/homeostasis. The content of Se in SW group increased for 12.2% and 36.8% in loin and flatbeef, respectively. The *S. latissima* used in this experiment contain 2 mg Se/kg DM, however the TMRs were not analyzed for Se. A previous study reported an increase in Se for 30% in beef loin when the Se content in the diet increased for 50%<sup>1</sup>. Finishing SW diet, rich in iodine (74 mg I/kg feed), increased the iodine level in meat homogenate 34-fold compared to CON. Although, FEEDAP Panel recommended 2 mg I/kg of feed as a maximum level for dairy farmed animals when calcium iodate anhydrous is used<sup>3</sup>, the high iodine level in SW in the present study had no effect on animal performance (not shown). Adequate Intake (AI) of Se and I for adult man and woman was set to 70 and 150 µg/day<sup>4</sup>, respectively. Therefore, consumption of 100 g of CON and SW lamb meat would provide 21.3% and 24.1% of the AI for Se, respectively. The variations in Se content between animals were reduced with SW diet (not shown) implying importance of feed enrichment in stabilization of Se content in meat. Moreover, SW lamb showed high increase in meat I content with 48.1% of the AI for I in 100 g of SW meat.

**Conclusion:** The enrichment of lamb meat with selenium and iodine content by supplementing finishing diets with seaweed showed that meat could be a source of both Se and I. Therefore, seaweed supplementation to finishing lamb could be used to increase level of nutrients important for human health.

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### Literature:

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