



# **Conversion of algae into nutritious feed ingredients with increased 25% digestibility**

## **Macro Cascade -Project**

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## Summary

The following report describes the process we used to increase the digestibility of seaweed in combination with rapeseed meal higher than 25%, using a 2-step lacto-fermentation ensilaging method. Our hypothesis was that lactic acid-fermentation have the potential to breakdown cell walls of seaweed to some extent, which in turn will make protein available for further hydrolysis and therefore increase digestibility higher than 25%. We identified and quantified several molecules of biological interest (amino acids, vitamins, glucose and lactic acid) in the raw seaweed and rapeseed starting material, and fermentation. This evaluation revealed that there is a considerable increase in glucose, lactic acid, free amino acids and vitamins. We measured the digestibility increase by comparing the average abundance in the raw materials with the average abundance in 7 fermentation batches. The digestibility of all compounds increased higher than 25% (table 2). Based on this we conclude the fermentation process used is effective in releasing the nutritious potential of seaweed. Finally, we observed that grinding of the seaweed was needed for kick starting the bacteria's ability to break down the cell walls. The size of the particles of the grinded seaweed should not be bigger than 1mm. Not ground seaweed prolonged the fermentation period.

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