EFFECT OF ENSILAGE ON TASTE, SENSORY AND HEALTH PROPERTIES OF ULVA *sp.*

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INTRODUCTION

SEAWEEDS

- **Biomass** yield and **composition variable** over growing season
- Harvest when biomass and carbohydrate content are at highest levels
- Need for **biomass preservation** to allow whole-year processing → **ENSILAGE**

ENSILAGE

Seaweed (carbohydrates) → *Lactic acid bacteria (epiphytic)* → *Anaerobic conditions* → **Organic acids** → ↓↓ pH → ~~Undesirable micro-organisms~~ → ~~Food deterioration~~

AIM

- Effect of **different additives and inocula on ensilage** of Ulva *sp.* (pH, volatile fatty acids, polysaccharide hydrolysis)
- Effect on taste and sensory properties

RESULTS

Room temperature, vacuum

2, 14 and 28 days

INOCULA

Cut Ulva *sp.*

Washed & cut Ulva *sp.*

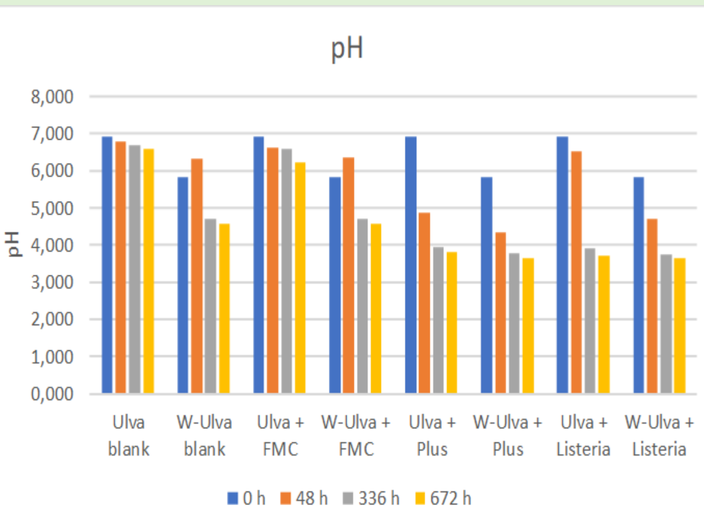
Feed More Combi
Lactic & acetic acid bacteria
AVEVE

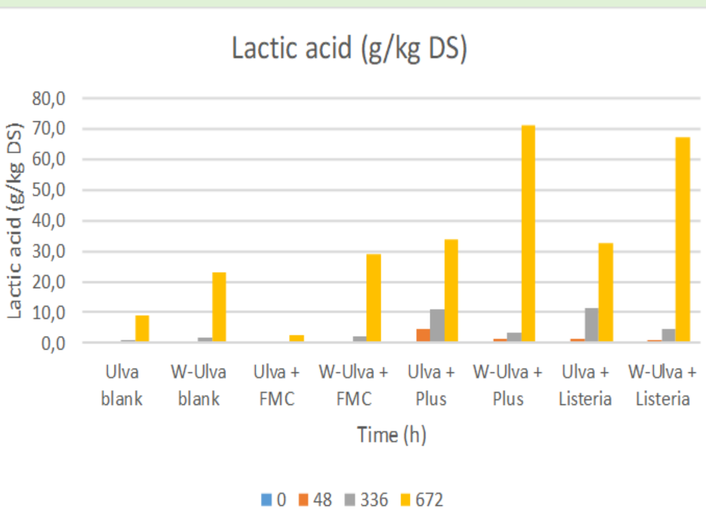
Holdbac YMC- Plus
Lactobacillus plantarum
DuPont

Holdbac Listeria 10 IP
Lactobacillus plantarum
DuPont

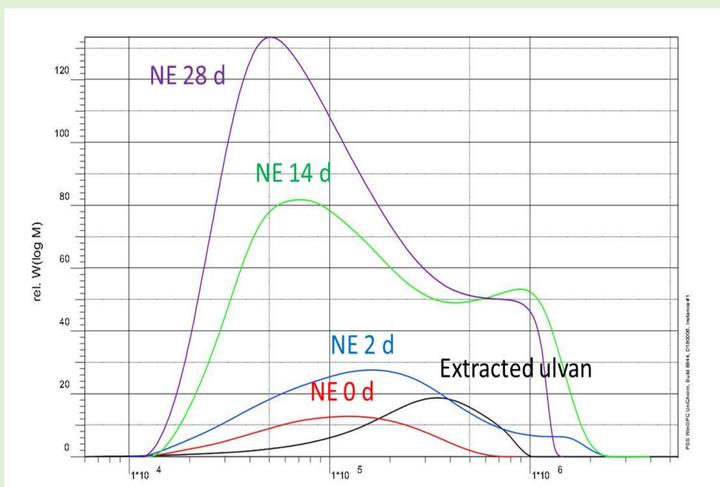
Ensiled Ulva *sp. (28 days)*

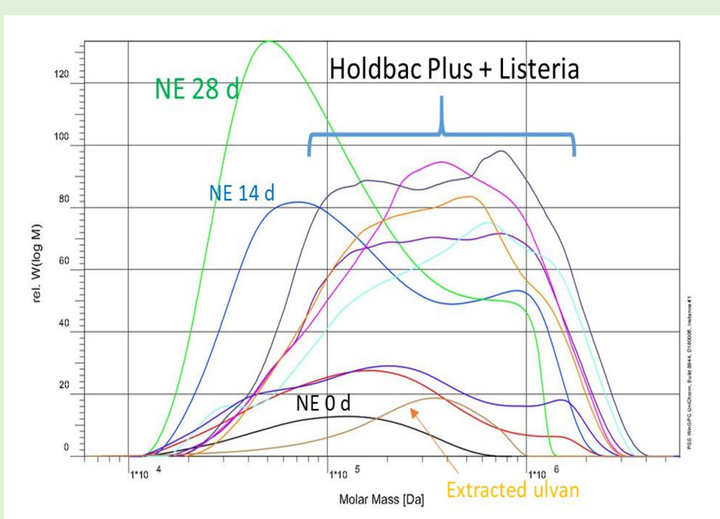
pH and organic acids





Polysaccharide degradation during ensilage





Impact on taste

1. Food-grade ensilagement of large batch fresh Ulva
2. Microbial testing on products (such as yeast and molds) related to food safety
3. Approval of the ILVO ethical committee (ECSG-ILVO board)
4. Training expert panel on ensilaged Ulva à because it is a new product
5. Evaluation of the different ensilagement treatments of Ulva by trained panel

CONCLUSIONS

- Addition of *Lactobacillus* (Holdbac Plus + Holdbac Listeria) decreases the pH already after 2 days in washed and non-washed Ulva *sp.*
- pH decrease is mainly due to formation of lactic acid (acetic and propionic acid are minor)
- Pre-treatment of seaweed prior ensilage with acid salts and enzymes to decrease pH and break cell wall did not promote ensilage
- Effect of ensilage in taste & sensory properties currently under investigation