Fermentation of bladderwrack (*Fucus vesiculosus*) and its composition

Temitope Oyedokun

Doc. Oskar Laaksonen (PhD), Niina Kelanne (D.Sc. Tech), Doc. PhD Annelie Damerau, Prof. Baoru Yang

Food sciences, Department of Life technologies, University of Turku, Turku, Finland

FOOD DEVELOPMENT (TECH)

BLADDERWRACK PLANT

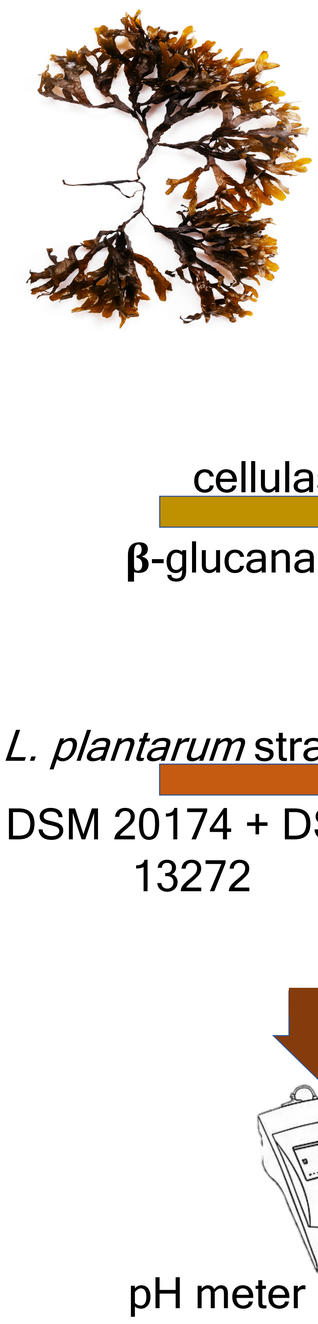
- Bladderwrack (*Fucus vesiculosus*) is a brown algae that releases volatiles into its environment either as a signal of reproduction or as a defense mechanism against herbivores [1].

Fucus vesiculosus
Family: Fucaceae

- In response to consumer demand for vegan options, use of aquatic plants in fermentation is a potential processing yet to be extensively explored.

The aim of this study is to identify the volatile compounds present in fermented bladderwrack.

METHODS



Seaweed broth conditions
- Blended
- Chopped

cellulase
β-glucanase

PRETREATMENT VESSEL

95℃
30 min

L. plantarum strains
DSM 20174 + DSM 13272

Fermentation
INCUBATOR

Algae:water (1:50)
37℃ for 5 days

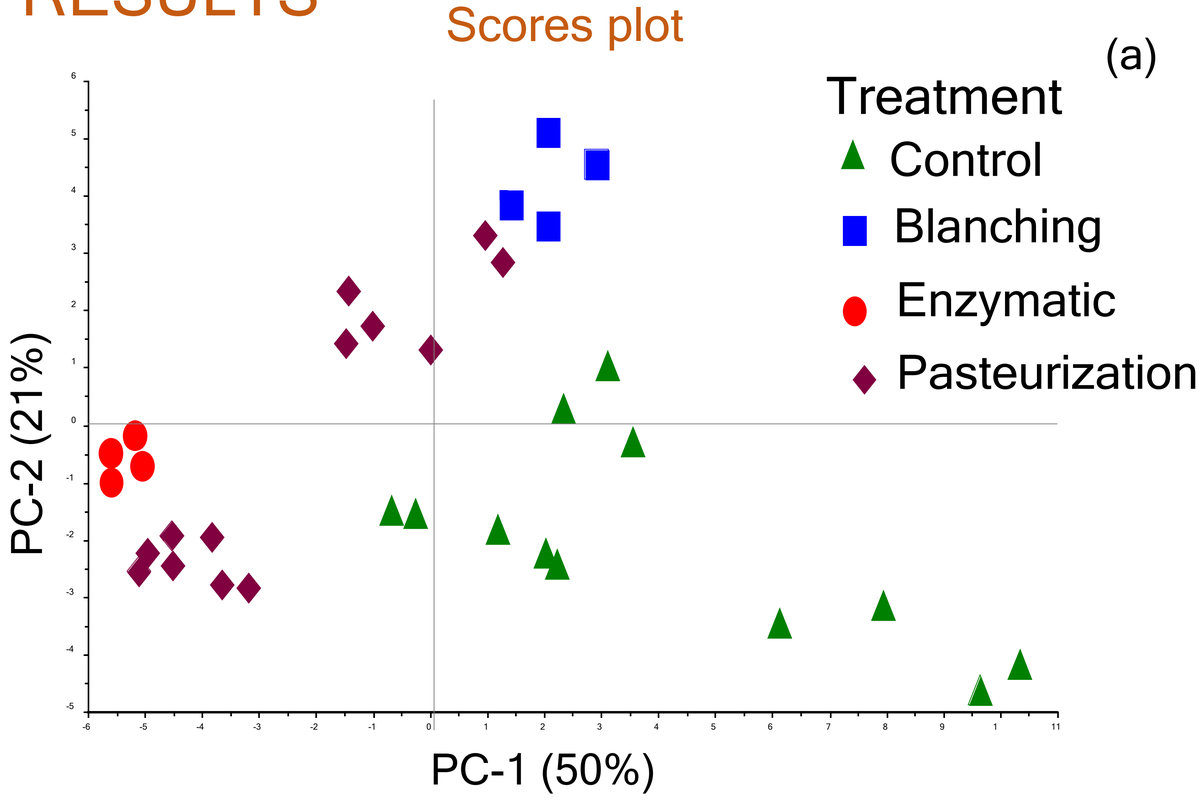
Samples collected on day 0, 3 & 5

pH meter

SPME GC-MS

STATISTICAL ANALYSIS

RESULTS



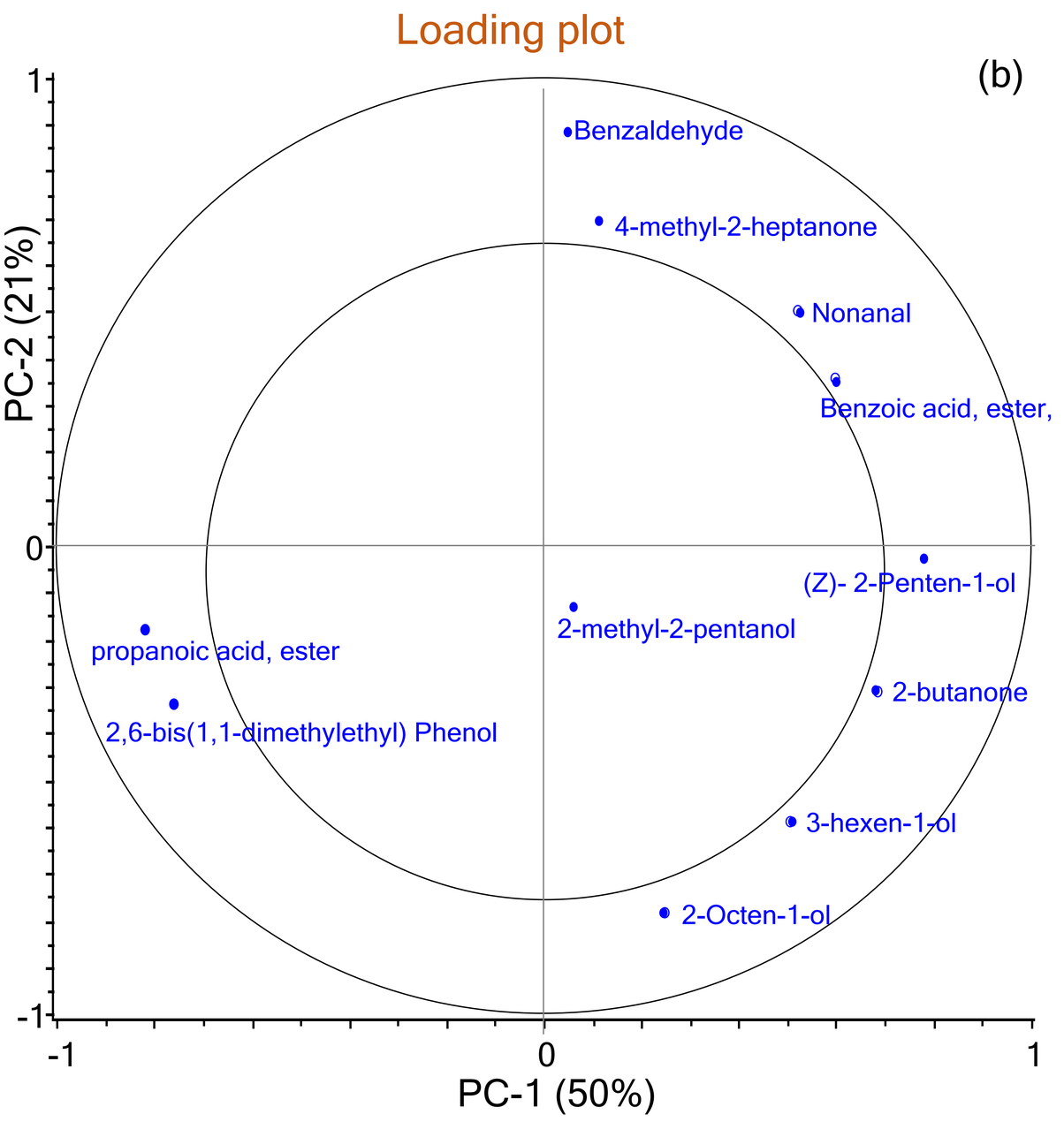


Figure (a) & (b). PCA score and loadings plot of selected volatiles in bladderwrack

CONCLUSIONS

- This study represents the first volatile analysis of fermented bladderwrack, with a total of 38 volatiles identified over the fermentation process.
- The pasteurized and enzymatic samples were dominated by ArOH and –COOH, blanched samples were dominated by -CHO and C=O, and control were mostly dominated by –OH.
- Fermentation remains a viable means for the development of seaweed and additional research is necessary to optimize the process.

REFERENCES

Akakabe, Y., & Kajiwara, T. (2008). Bioactive volatile compounds from marine algae: feeding attractants. Journal of Applied Phycology, 20(5), 661-664.