

Characterization of high added value compounds in drained water during cod fish (*Gadus morhua*) salting process



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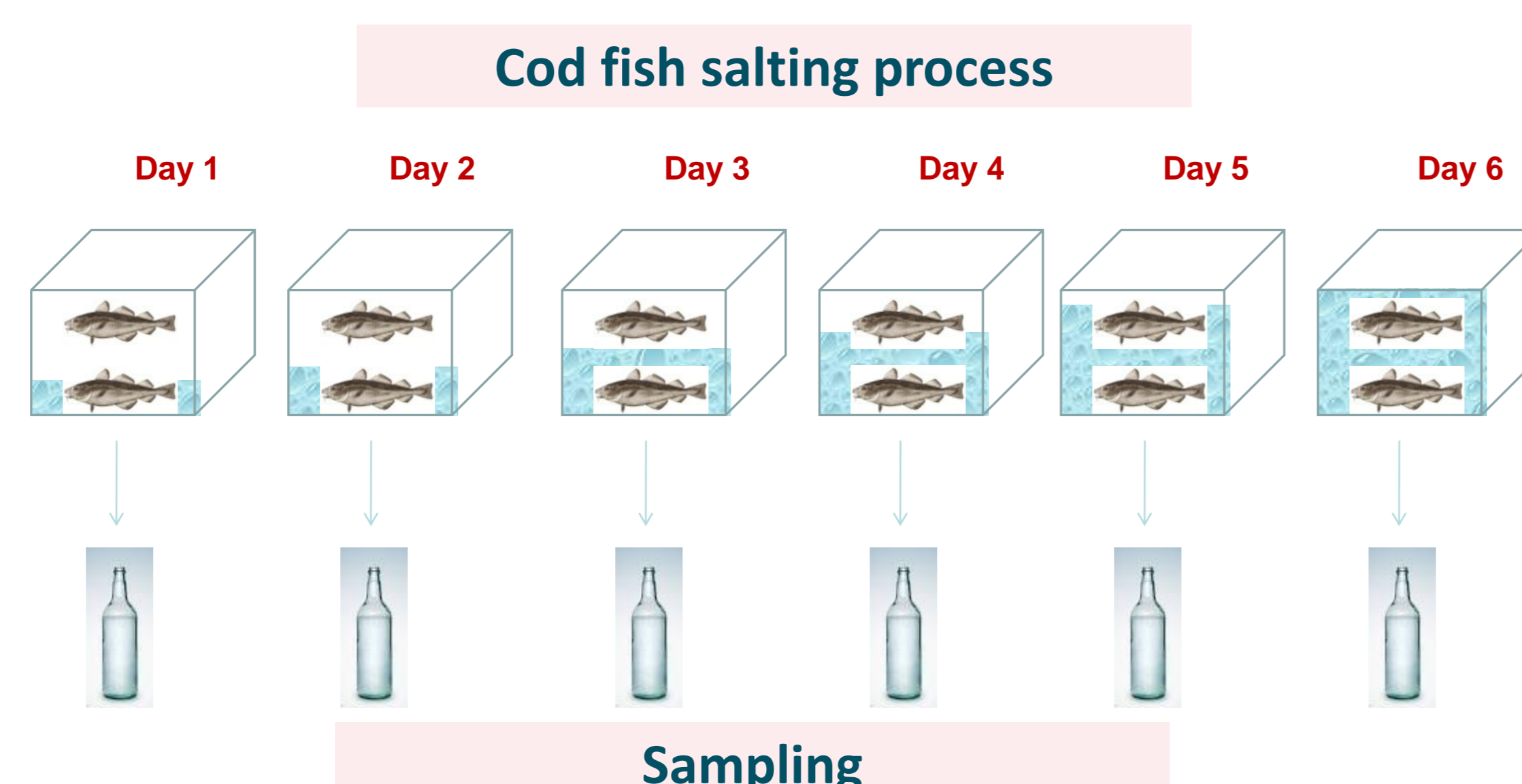
Introduction

Atlantic cod fish (*Gadus morhua*) is usually dry-salted by mixing with food grade marine salt and stacking in a tank for 6 days. Along the salting process, cod fish not only incorporates salts but also releases water up to 22 % (w/w) of its weight. This by-product is normally directly discharged, carrying a significant amount of important compounds (viz. free amino acids and proteins) that are presently not being valorized.

Objective

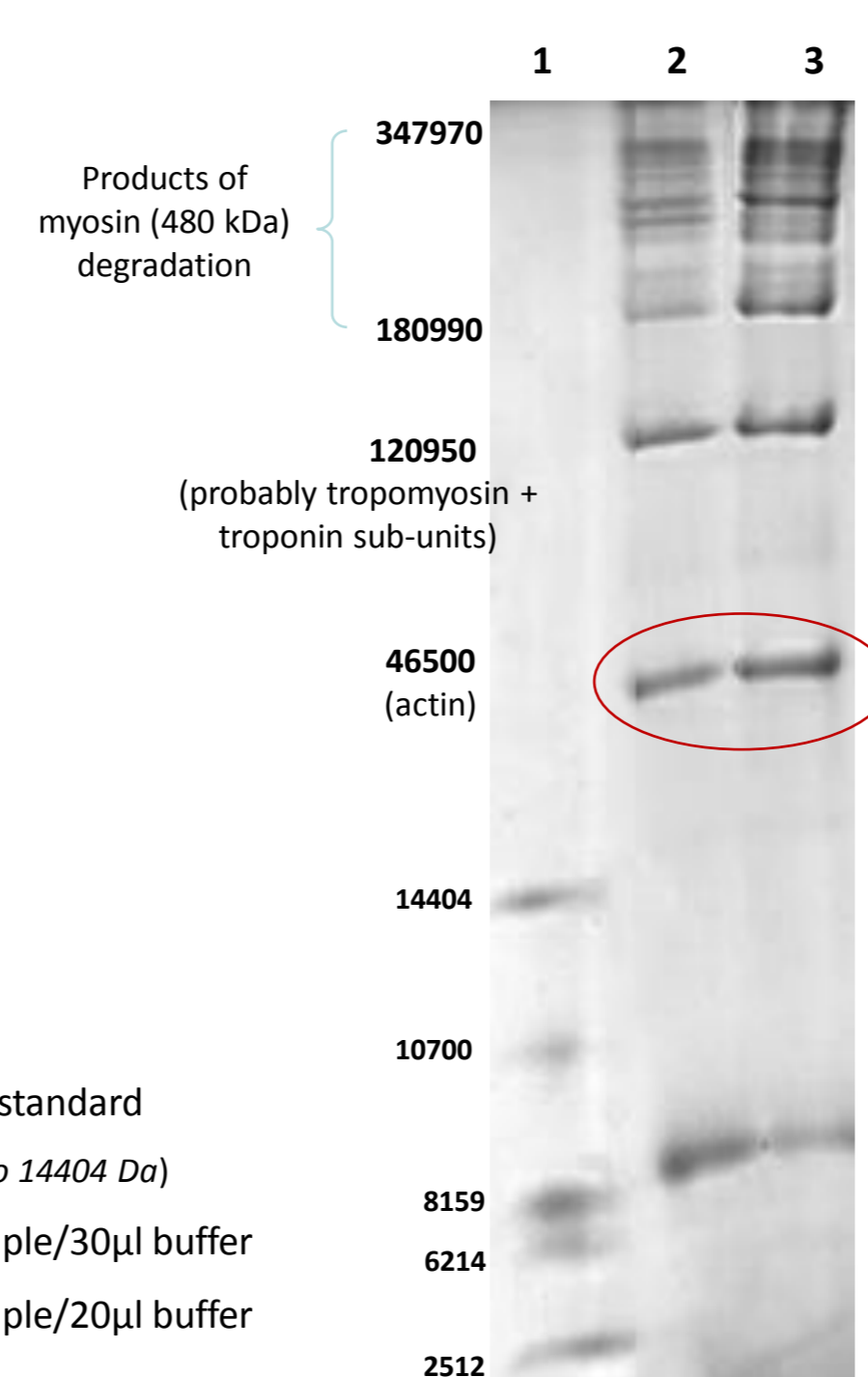
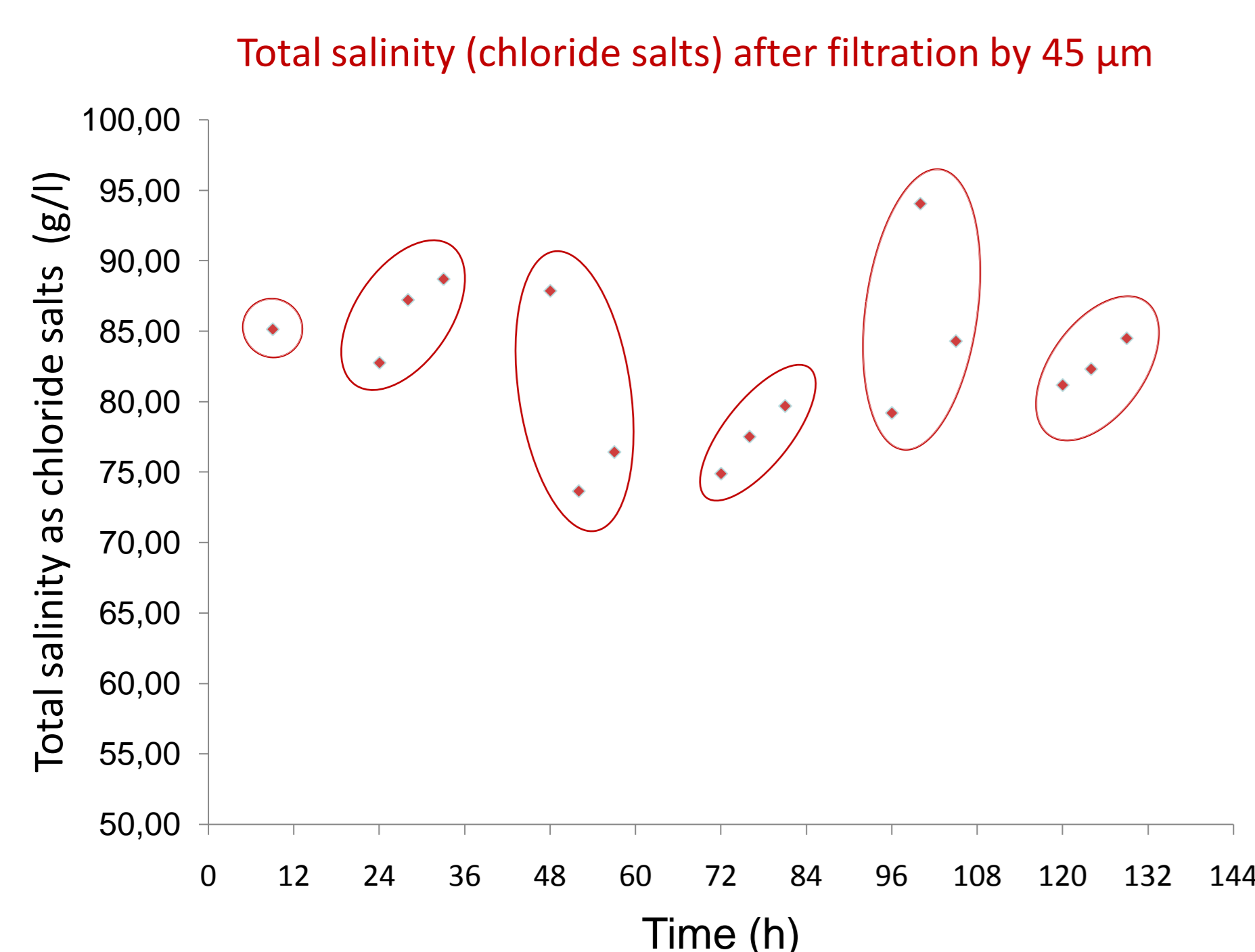
In the present study, the drained water originated during the cod fish salting process was collected and analyzed throughout the six days processing, in order to determine its content in amino acids, taurine and creatine, in myofibrillar proteins and chloride salinity.

Methodology

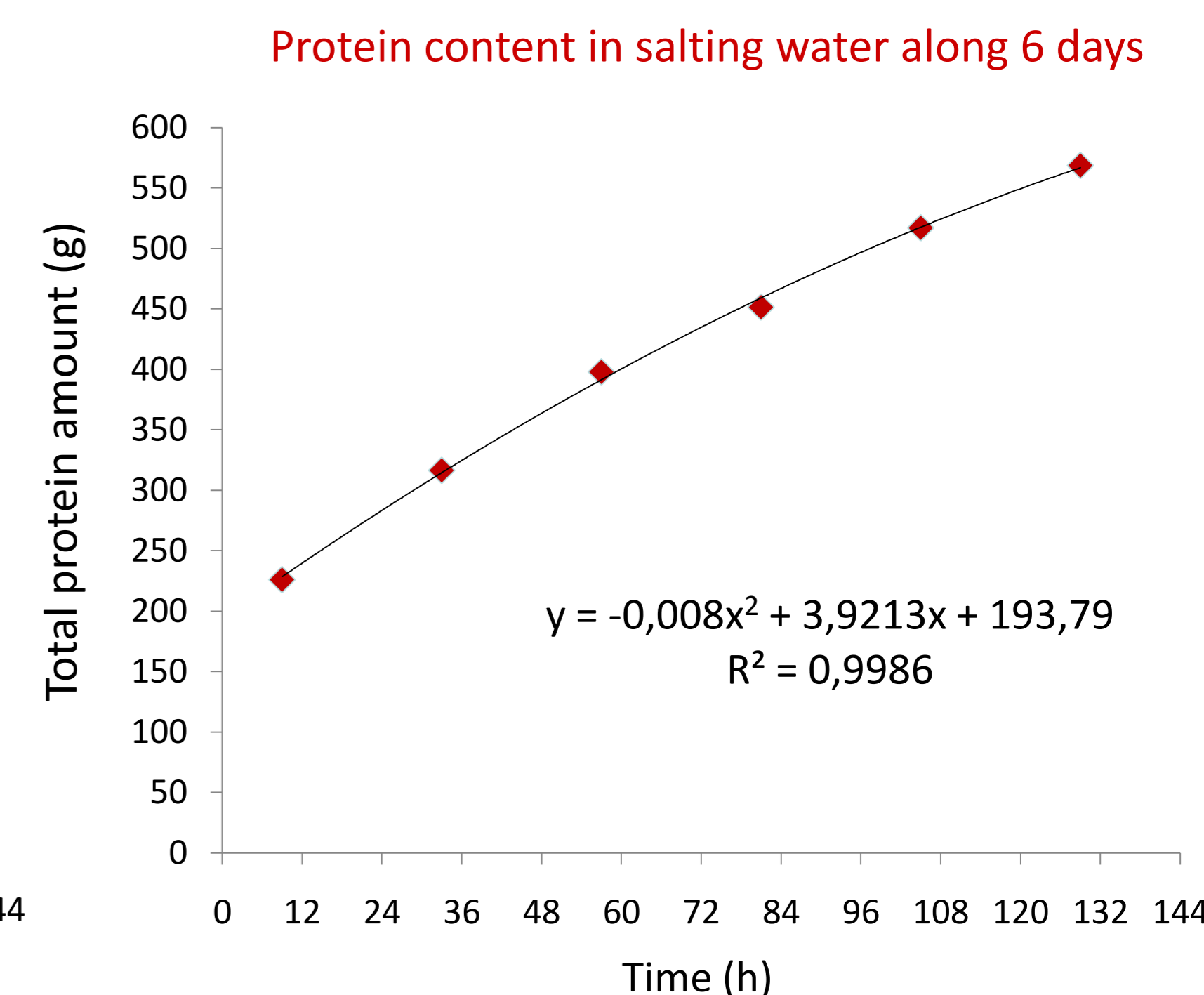
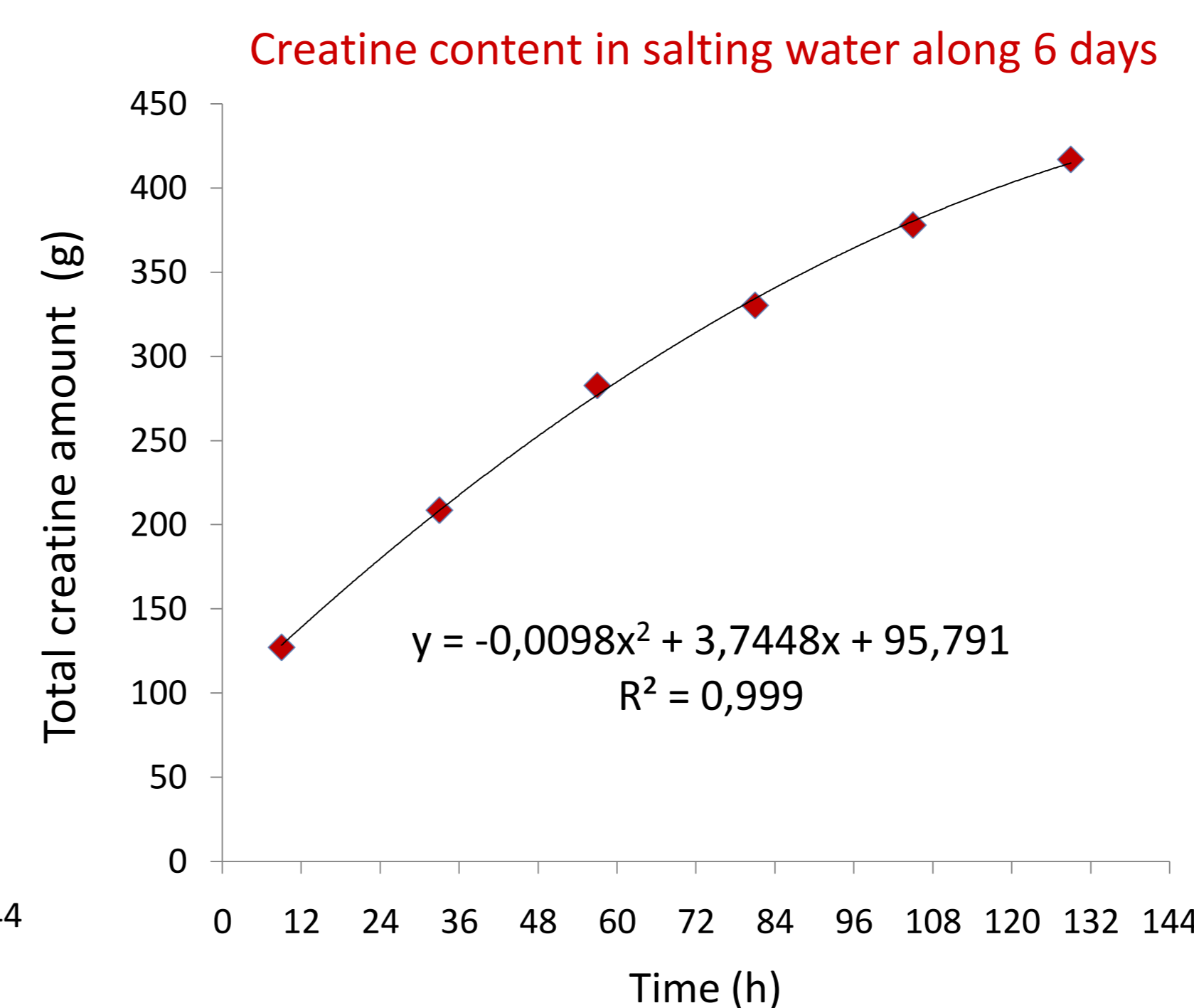
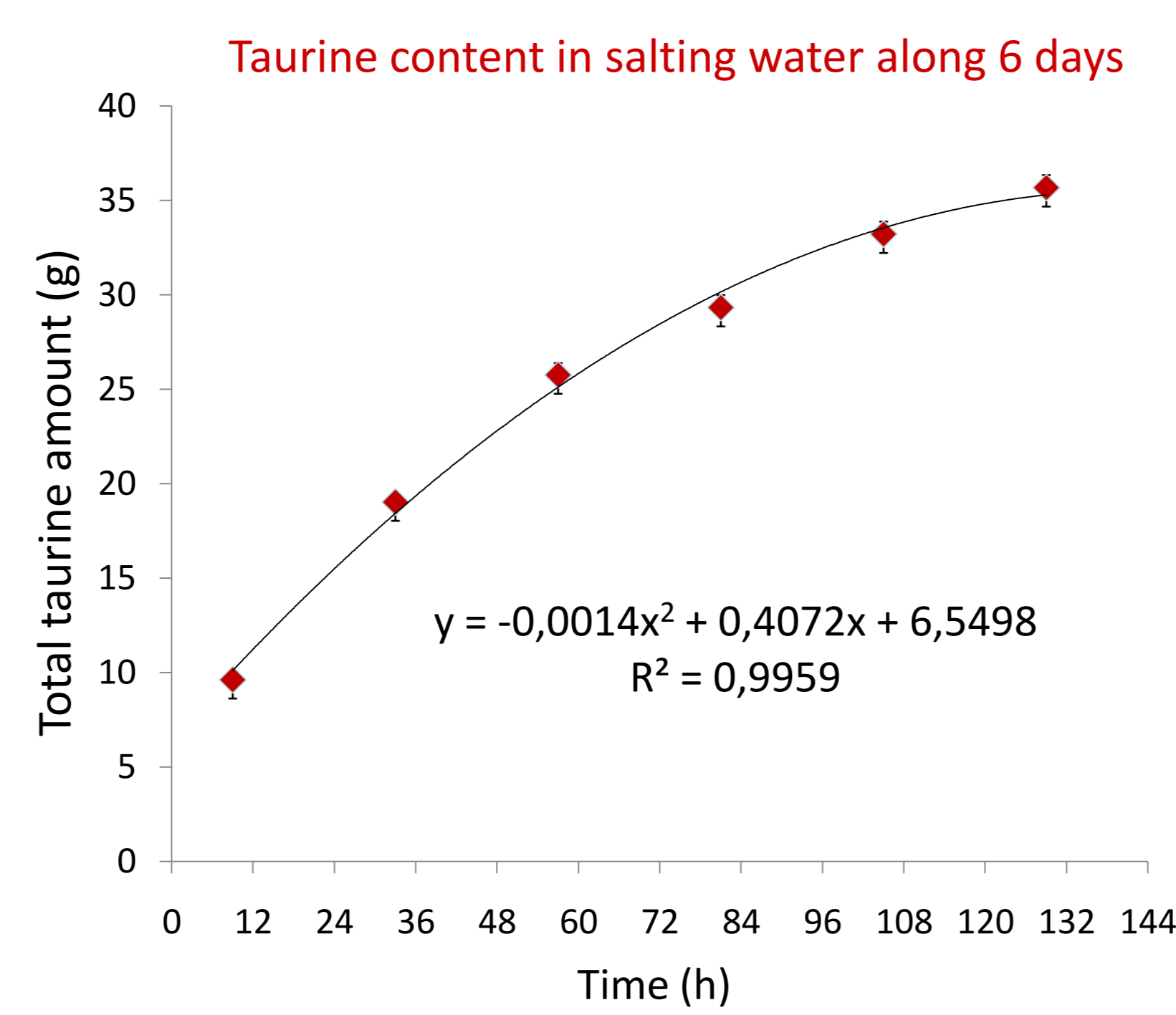
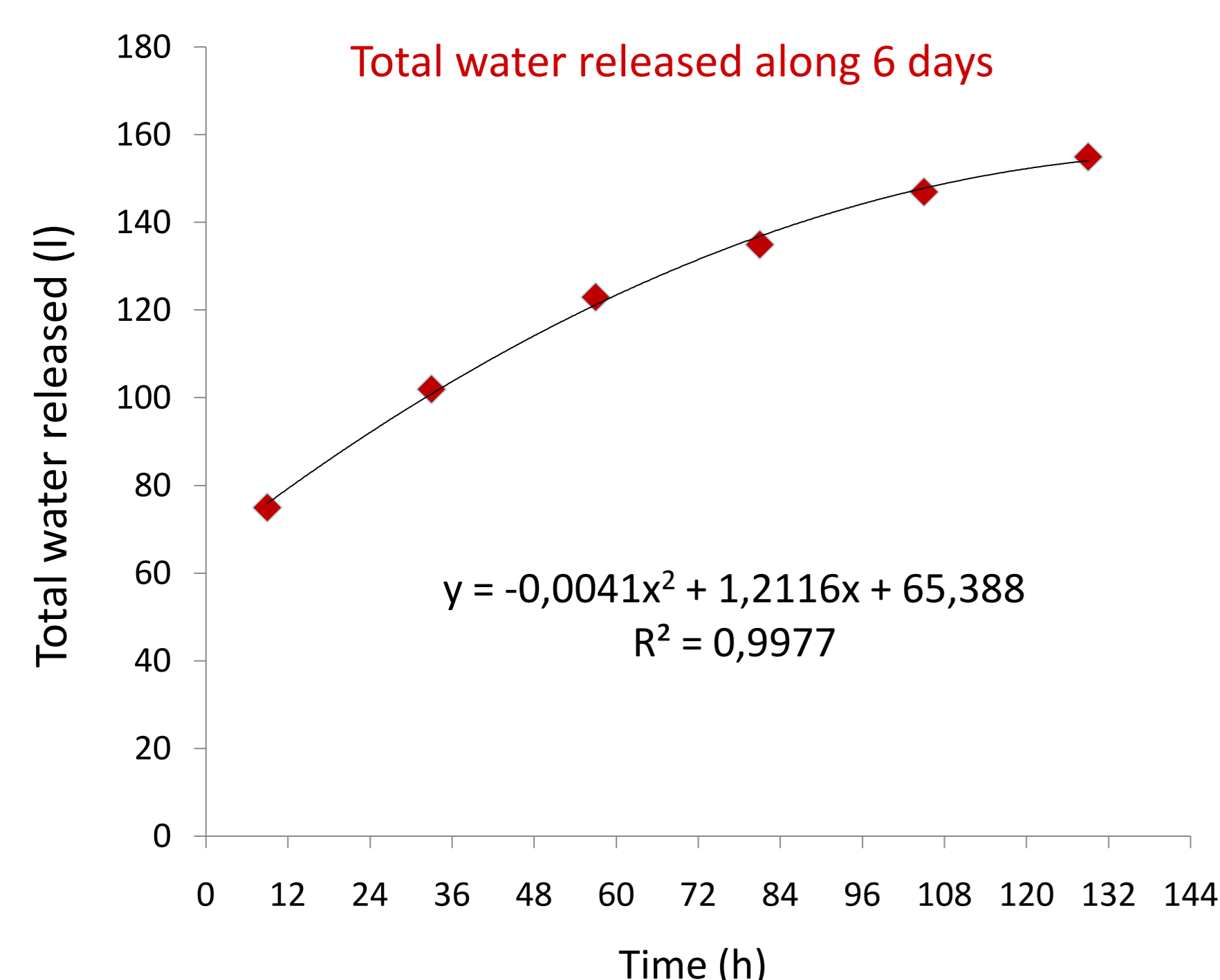


- The taurine and creatine contents have been determined by HPLC-UV/Vis analysis.
- Myofibrillar proteins have been screened by SDS-PAGE electrophoresis and further quantified by a spectrophotometric method.
- Chloride salinity has been determined by conductivity.
- All samples have been collected in duplicate and have been analyzed in triplicate.

Results and Discussion



- Along the cod fish salting process, salinity (Fig. 1), proteins and peptides (Fig. 2), water loss (Fig. 3), taurine content (Fig. 4), creatine content (Fig. 5) and myofibrillar proteins content (Fig. 6) were quantified.
- Daily losses of about 0.3 g/L of taurine, 2.9 g/L of creatine and 4 g/L of myofibrillar proteins were observed, implying that 14.5 % of taurine, 11.1 % of creatine and 0.45 % of myofibrillar proteins of the initial content in fresh cod fish was drained away to the generated salting water.
- Despite the alkaline salting process (i.e. salt pH=8.5), a significant protein release was observed, indicating that this process is mostly promoted by the high salt content.



Conclusions

The work carried out so far suggests that water drained away along cod fish salting process can be used as a source of natural bioactive compounds. The characterised biological and physiological values gives place to a new area that can be explored through the extraction of such components, which may be further incorporated into functional foods or used in food supplements.

References

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