

ABSTRACT

Seaweed is increasingly promoted as a novel, sustainable food source that could satisfy a key role in Western food systems in the near future. Despite a growing body of research indicating uses for seaweed as an ingredient rather than a raw material for critical food components, adoption rates among Western consumers remain low. Seaweed enriched foods are often disliked by consumers due to their addition of undesirable flavours to foods, including fishy and marine flavours typical of seafood. The objective of this study was to evaluate how fermentation can impact the flavour properties of *Porphyra umbilicalis* (laver), an underutilized seaweed. This study investigated the enrichment of 54.5% dark chocolate with *Porphyra umbilicalis* fermented with three different cultures: two bacteria (*Streptococcus thermophilus* (ST) and *Pediococcus pentosaceus* (PP)) and one yeast (*Aspergillus oryzae* (AO)). Five formulations were tested for acceptability using nine-point hedonic scales and two check-all-that-apply (CATA) questionnaires for sensory perception and emotional responses by consumers ($n = 83$). All formulations including seaweed significantly reduced consumer liking of the chocolate, although the samples containing seaweed fermented with AO were liked significantly more than the other samples containing seaweed ($p < 0.05$). These findings suggest that fermentation of seaweed using AO may increase consumer acceptance of seaweed among Western consumers when added to familiar products that do not typically contain seaweed. Future research should further investigate consumer responses to different varieties of seaweed or alternate fermentation cultures.