

Seaweed Food Safety Guidance

Sea Grant
NEW YORK



Michael Ciaramella, **Jennifer Perry***, Amanda Shore, Catherine Janasie, Stephanie Otts, Indu Upadhyaya, Zach Gordon, Brian Himelbloom, Razieh Farzad, Christina DeWitt, and Anoushka Concepcion



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Potential Food Safety Hazards

Associated with seaweed and seaweed-based products

Species Hazards Chapters

Table 4-1: Species-related seaweed hazards for edible brown seaweeds known to be used for human consumption.

Common Name/ Scientific Name	Scientific Name	Pathogens ¹ in Harvest Area Chapter 5	Parasites ² in Harvest Area Chapter 6	Environmental Chemicals Chapter 7	Iodine Chapter 8	Natural Toxins Chapter 9
Arame	<i>Eisenia bicyclis</i>	✓		✓	✓	✓
Bell-Bladed Sargassum	<i>Sargassum turbinarioides</i>	✓		✓	✓	✓
Bladderwrack	<i>Fucus vesiculosus</i>	✓		✓	✓	✓
Bull Kelp	<i>Nereocystis luetkeana</i>	✓		✓	✓	✓
Channeled Wrack	<i>Pelvetia canaliculata</i>	✓		✓	✓	✓
Cochayuyo	<i>Durvillaea antarctica</i>	✓		✓	✓	✓
<i>Cystoseira barbata</i>	<i>Cystoseira barbata</i>	✓		✓	✓	✓
Forkweed	<i>Dictyota dichotoma</i>	✓		✓	✓	✓
Hijiki	<i>Sargassum fusiforme</i>	✓		✓	✓	✓
<i>Jania capillacea</i>	<i>Jania capillacea</i>	✓		✓	✓	✓
Japanese Wireweed	<i>Sargassum muticum</i>	✓		✓	✓	✓
<i>Kappaphycus</i>	<i>Kappaphycus</i>	✓		✓	✓	✓
Kombu	<i>Saccharina japonica</i>	✓		✓	✓	✓
Mozuku	<i>Cladosiphon okamuranus</i>	✓		✓	✓	✓
Mozuku	<i>Nemacystus decipiens</i>	✓		✓	✓	✓
Oarweed	<i>Laminaria digitata</i>	✓		✓	✓	✓
Ocean Ribbons	<i>Lessionopsis littoralis</i>	✓		✓	✓	✓
Peacock's Tail	<i>Padina pavonica</i>	✓		✓	✓	✓
Ribbon Kelp	<i>Alaria marginata</i>	✓		✓	✓	✓
Rockweed	<i>Ascophyllum nodosum</i>	✓		✓	✓	✓
Rockweed	<i>Fucus distichus</i>	✓		✓	✓	✓
Sea Fern Weed	<i>Halopteris filicina</i>	✓		✓	✓	✓

¹ Not considered a significant hazard if the seaweed will be processed with a method that will kill potential microbial pathogens prior to consumption.

² No data to support parasitic hazards in seaweeds to date.

Process-related Hazards Chapters

Finished Product	Pathogen Growth Due to Temperature Abuse Chapter 10	Pathogen Contamination Chapter 11	Growth of <i>Clostridium botulinum</i> and Toxin Formation Chapter 12	Pathogen Survival Through Cooking/Pasteurization Chapter 13	Allergens and Food Intolerance Substances Chapter 14 ¹	Physical Hazards (metal, glass, plastic) Chapter 15 ²
Dried Milled ³ (<0.85 aw)	☐ ROP ☐ Other	✓ ROP ✓ Other	☐ ROP ☐ Other	☐ ROP ☐ Other	✓ ROP ✓ Other	✓ ROP ✓ Other
<u>Fermented/Acidified/Salted/Brined/Pickled</u> (not cooked/Pasteurized)	✓ ROP ✓ Other	✓ ROP ✓ Other	✓ ROP ☐ Other	☐ ROP ☐ Other	✓ ROP ✓ Other	✓ ROP ✓ Other
<u>Low Acid Canned Food</u>	✓ ROP ✓ Other	✓ ROP ✓ Other	✓ ROP ☐ Other	☐ ROP ☐ Other	✓ ROP ✓ Other	✓ ROP ✓ Other
Partially Cooked (<u>blanched</u>)	✓ ROP ✓ Other	✓ ROP ✓ Other	✓ ROP ☐ Other	☐ ROP ☐ Other	✓ ROP ✓ Other	✓ ROP ✓ Other
<u>Pasteurized</u>	✓ ROP ✓ Other	✓ ROP ⁴ ✓ Other ⁴	✓ ROP ☐ Other	✓ ROP ✓ Other	✓ ROP ✓ Other	✓ ROP ✓ Other
Fully Cooked Prepared Food	✓ ROP ✓ Other	✓ ROP ⁴ ✓ Other ⁴	✓ ROP ☐ Other	✓ ROP ✓ Other	✓ ROP ✓ Other	✓ ROP ✓ Other
Prepared from <u>Ready-to-Eat Seaweed Product</u> (salads, dips, spreads, dressings)	✓ ROP ✓ Other	✓ ROP ✓ Other	✓ ROP ☐ Other	☐ ROP ☐ Other	✓ ROP ✓ Other	✓ ROP ✓ Other



Hazards Chapters: Content and Structure

Introduction to Hazard

Determining Significant Hazards

Known or Reasonably Foreseeable OR
Reasonably likely to occur

Potential Hazard Controls

Critical Control Points

Control Strategies

Example Food Safety and HACCP Plans



Control Measures

Examples:

Source Controls

Cooking

Pasteurization

Freezing

Acidification

Fermentation

Non-thermal Processing

Labeling

Visual Examination and Observation

etc.

**To prevent,
eliminate or reduce
hazards to an
acceptable level**

Appendices

Appendix A

Pathogens in Harvest Area Reference Table

Appendix B

Environmental Chemical Contaminants Reference Tables

Appendix C

Natural Toxins Reference Tables

Appendix D

Iodine Concentrations Reference Tables

Appendix E

Foodborne Outbreaks

Appendix F

Example Seaweed Threshold Calculations

Questions?



THE UNIVERSITY OF
MAINE

Jennifer Perry, PhD

Associate Professor of Food Microbiology

School of Food and Agriculture

Maine Agricultural and Forest Experiment Station



MAINE AGRICULTURAL AND FOREST
**EXPERIMENT
STATION**



jennifer.perry@maine.edu

5735 Hitchner Hall

Orono, ME 04469-5375