

Outbreaks from Tree Nuts, Peanuts, and Sesame Seeds: Table and References

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Outbreaks of foodborne illness associated with the consumption of tree nuts, peanuts, and sesame seeds

Type	Product (source)	<i>Salmonella enterica</i> serovar or other pathogen	Year	Number of cases	Isolated from product?	Outbreak location(s)	Source
Tree nuts							
Almond	raw whole (California)	<i>S. Enteritidis</i> PT 30	2000–01	168	yes	Canada, USA	CDPH, 2002; Chan et al., 2002; Isaacs et al., 2005
	raw whole (California)	<i>S. Enteritidis</i> PT 9c	2003–04	47	no	Canada, USA	CDC, 2004; CDPH, 2004
	raw whole (California?)	<i>S. Enteritidis</i> NST 3+ (aka PT 30)	2005–06	15	no	Sweden	Ledet Müller et al., 2007
	raw whole (Australia)	<i>S. Typhimurium</i> PT 3	2012	43	yes	Australia	OzFoodNet, 2013; FSANZ, 2012
	almond and/or peanut butter	<i>S. Braenderup</i>	2014	6	no (yes from environment samples)	USA (CT, IA, NM, TN, TX)	CDC, 2014b
	sprouted almond and cashew-almond spreads (U.S. almonds; cashews from Indonesia)	<i>S. Paratyphi</i> B (aka <i>S. Java</i>)	2015	13 (all nut spreads)	no	USA (CA, CO, GA, HI, ID, IL, ME, NC, NJ, OR)	CDC, 2016a; Heiman Marshall et al., 2018; US FDA 2016a
	vegan pâté: almond/cashew/walnut/mushroom (nut sources not stated)	<i>C. botulinum</i> type B	2020	13	yes	Vietnam	Ngan et al., 2020; Whitworth, 2020b
Brazil nuts	nut bars, muesli, and granola (UK products; Brazil nuts from Bolivia)	<i>S. Typhimurium</i> cases <i>S. Anatum</i> isolated from Bolivian product	2020	98	yes	UK	News Desk, 2020; Whitworth, 2020a

Type	Product (source)	<i>Salmonella enterica</i> serovar or other pathogen	Year	Number of cases	Isolated from product?	Outbreak location(s)	Source
Cashew	peanut/cashew mix (not stated)	<i>S. Typhimurium</i> PT 170	2010	19	yes	Australia	OzFoodNet, 2010
	cashew “cheese” ¹ – raw (California; cashews from SE Asia)	<i>S. Stanley</i>	2013–14	18	yes	USA (CA, NV, WY)	CDC, 2014a; Whitman et al., 2021; Whitworth, 2014
	cashew cheese ¹ – raw, fermented (made in Canada)	<i>S. Weltevreden</i>	2017	23	yes	Canada	Schmitt et al., 2018
	sprouted cashew-almond spreads (cashews from Indonesia; U.S. almonds)	<i>S. Paratyphi B</i> (aka <i>S. Java</i>)	2015	13 (all nut spreads)	no	USA (CA, CO, GA, HI, ID, IL, ME, NC, NJ, OR)	CDC, 2016a; Heiman Marshall et al., 2018; US FDA, 2016a
	vegan pâté: almond/cashew/walnut/mushroom (nut sources not stated)	<i>C. botulinum</i> type B	2020	13	yes	Vietnam	Ngan et al., 2020; Whitworth, 2020b
	cashew brie – vegan product (made in U.S.)	<i>S. Chester</i> , <i>S. Duisburg</i> , <i>S. Urbana</i> , <i>S. Typhimurium</i> Note: <i>S. Vinohrady</i> & <i>S. Leiden</i> also isolated from facility, product and/or raw cashews but not associated with outbreak cases	2020–21	20	yes (brie, raw cashews)	USA (CA, FL, MD, TN)	CDC, 2021; Fensterbush, 2021; US FDA, 2021a, 2021b
Coconut	desiccated (Papua New Guinea)	<i>S. Typhi</i> , <i>S. Senftenberg</i> and possibly others	1953	>50 (est. from epi curve)	yes	Australia	Wilson and Mackenzie, 1955
	desiccated (Sri Lanka)	<i>S. Paratyphi B</i>	1960–61	3	yes	England	Semple et al., 1961

Type	Product (source)	<i>Salmonella enterica</i> serovar or other pathogen	Year	Number of cases	Isolated from product?	Outbreak location(s)	Source
	desiccated (not stated)	<i>S. Java</i> PT Dundee	1999	18	yes	United Kingdom	Ward et al., 1999
	frozen, precut pieces (Indonesia)	<i>S. Chailey</i>	2017	14 (USA) 5 (Canada)	no	USA (CO, KA, OR, PA, TX, UT, WA), Canada (BC)	Luna et al., 2018; Obenhuber, 2020
	frozen, shredded (Vietnam)	<i>S. I 4,[5],12:b:-</i>	2017–18	26 (USA) 1 (Canada)	yes	USA (CA, CO, CT, MA, NJ, NY, OK, PA, WA), Canada	CDC, 2018a; Obenhuber, 2020
	dried, raw (Sri Lanka?)	<i>S. Newport</i> <i>S. Typhimurium</i>	2017–18	1 (USA) 14	yes	USA (CA, CO, CT, ID, MO, OR, TX, UT + DC)	CDC, 2018b; Obenhuber, 2020
Hazelnut	in-shell (Oregon)	<i>E. coli</i> O157:H7	2010–11	8 (USA) 2 (Canada)	yes	Canada, USA (WI, MN, MI)	CDC, 2011a; CDPH, 2013; Farber, 2015 (personal communication); Miller et al., 2012
	in-shell (Oregon)	<i>S. Typhimurium</i>	2016	6	yes	USA (OR, WA)	Beach, 2017; OHA, 2017; Whitman et al., 2021
	sprouted hazelnut spreads (hazelnuts from Turkey)	<i>S. Paratyphi B</i> (aka <i>S. Java</i>)	2015	13 (all nut spreads)	no	USA (CA, CO, GA, HI, ID, IL, ME, NC, NJ, OR)	CDC, 2016a; Heiman Marshall et al., 2018; US FDA 2016a
Pine nut	whole, bulk (Turkey)	<i>S. Enteritidis</i>	2011	53	yes	USA (MD, NY, NJ, PA, VA, WV)	CDC, 2011b; Whitman et al., 2021
Pistachio	pistachios; pistachio products (California)	<i>S. Montevideo</i> <i>S. Newport</i> <i>S. Senftenberg</i>	2008–09	83	yes	USA (21 states)	CDC, 2009b; Whitham et al., 2021
	roasted (California)	<i>S. Senftenberg</i>	2013	8	yes	USA (CA, KS, MA, MD, PA, WI)	US FDA, 2014
	roasted inshell and shelled (California)	<i>S. Montevideo</i> <i>S. Senftenberg</i>	2015–16	9 Montevideo 2 Senftenberg	yes	USA (AL, AZ, CT, GA, MI, MN, ND, VA, WA)	CDC, 2016b; US FDA, 2016b, 2016c
Walnut	raw shelled halves, pieces, walnut crumbs (California)	<i>E. coli</i> O157:H7	2011	14	no	Canada	CFIA, 2011; PHAC, 2011

Type	Product (source)	<i>Salmonella enterica</i> serovar or other pathogen	Year	Number of cases	Isolated from product?	Outbreak location(s)	Source
	vegan pâté: almond/cashew/walnut/mushroom (nut sources not stated)	<i>C. botulinum</i> type B	2020	13	yes	Vietnam	Ngan et al., 2020; Whitworth, 2020b

¹The “cheese” was a non-dairy product made from cashews, water, and other ingredients.

Type	Product (Source)	<i>Salmonella enterica</i> serovar or other pathogen	Year	Number of cases	Isolated from product?	Outbreak location(s)	Source
Peanuts							
Peanut	boiled peanuts (Taiwan)	<i>C. botulinum</i> type A	1986	9 total 2 fatal	yes (toxin)	Taiwan	Chou et al., 1988; Tsai et al., 1990
	savory snack (Israel)	<i>S. Agona</i> PT 15	1994–95	71	yes	Israel, United Kingdom, USA	Killelea et al., 1996; Shohat et al., 1996; Threlfall et al., 1996
	peanut butter (Australia)	<i>S. Mbandaka</i>	1996	15	yes	Australia	Scheil et al., 1997, 1998
	flavored or roasted in-shell (Asia)	<i>S. Stanley</i> and <i>S. Newport</i>	2001	97 Stanley 12 Newport	yes	Australia, Canada, United Kingdom	Kirk et al., 2004
	boiled (USA)	<i>S. Thompson</i>	2006	100	yes	USA (South Carolina)	Marler Clark LLP, 2006; ProMED-mail, 2006; Christian et al., 2007
	peanut/cashew mix (not stated)	<i>S. Typhimurium</i> PT 170	2010	19	yes, but not same MLVA	Australia	OzFoodNet, 2010
	peanut butter (USA)	<i>S. Tennessee</i>	2006–07	715	yes	USA (48 states)	CDC, 2007; Sheth et al., 2011
	peanut butter (not stated)	<i>C. botulinum</i> (serotypes A and B) ²	2006–08	5	yes (spores)	Canada	Sheppard et al., 2012
	peanut butter, peanut butter–containing products (USA)	<i>S. Typhimurium</i>	2008–09	714	yes	USA (46 states), one case in Canada	Cavallaro et al., 2011; CDC, 2009a, 2010
	peanut butter (USA)	<i>S. Bredeney</i>	2012	42	no	USA (20 states)	CDC, 2012a, 2013a
	peanut and/or almond butter (USA)	<i>S. Braenderup</i>	2014	6	no (yes from environment samples)	USA (CT, IA, NM, TN, TX)	CDC, 2014b
	peanut butter (USA)	<i>S. Senftenberg</i>	2022	21	(ongoing investigation)	USA (17 states: AR, AZ, FL, GA, IL, IN, MA, MI, MO, NC, NY, OH, SC, TX, VA, WA, WV)	US FDA, 2022

² Outbreak of intestinal toxemia botulism, which is very rare; two of three patients studied had a history of Crohn's disease and bowel surgery.

Type	Product (Source)	<i>Salmonella enterica</i> serovar or other pathogen	Year	Number of cases	Isolated from product?	Outbreak location(s)	Source
Seeds							
Sesame seed	halva (Turkey)	S. Typhimurium DT 104	2001	27 (Sweden) 18 (Norway) 17 (Australia)	yes	Australia, Germany, Norway, Sweden, United Kingdom	Aavitsland et al., 2001; Brockmann, 2001; de Jong et al., 2001; Little, 2001; O'Grady et al., 2001
	tahini (Egypt)	S. Montevideo	2002	55	yes	Australia	Tauxe et al., 2008; Unicomb et al., 2005
	tahini (Lebanon)	S. Montevideo	2003	3	yes	Australia	Unicomb et al., 2005
	tahini and halva (Lebanon)	S. Montevideo	2003	10	yes	New Zealand	Unicomb et al., 2005
	tahini (Lebanon) and hummus (made from the tahini)	S. Bovismorbificans	2011	23	yes	USA (7 states)	CDC, 2012b
	tahini (Turkey) and hummus (made from the tahini)	S. Montevideo S. Mbandaka S. Maastricht	2012	12 3 1	yes	New Zealand	NZPHS, 2013; Paine et al., 2014
	tahini (Turkey)	S. Montevideo, S. Mbandaka	2013	16	yes	USA (9 states)	CDC, 2013b
	sesame-based food products (incl. tahini and seeds)	<i>Salmonella enterica</i> 11:z41:enz15 (new serotype)	2016–17	40	yes	EU Member States (Greece, Germany, Czech Republic, Luxembourg)	ECDC, 2017
	tahini (Israel)	S. Concord	2018–19	8	yes	USA (4 states)	CDC, 2019a; US FDA, 2019
	tahini (Palestine)	S. Concord	2019	6	yes	USA (3 states)	CDC, 2019b
	sesame-based tahini/halva products (Syria)	S. Amsterdam S. Havana S. Kintambo S. Mbandaka S. Orion S. Senftenberg	2019–21	135	yes	EU/EEA countries (121): Denmark, Sweden, Germany, Norway, Netherlands + linked cases in USA (6), Canada (8)	EFSA, 2021

References Cited

- Aavitsland P., O. Alvseike, P. J. Guérin, and T. L. Stavnes. 2001. International outbreak of *Salmonella* Typhimurium DT104 – update from Norway. *Eurosurveillance* 5(33), 16 August:1701. Available at: <https://www.eurosurveillance.org/content/10.2807/esw.05.33.01701-en>.
- Beach, C. 2017. *Salmonella* outbreak traced to hazelnuts from Oregon farm. *Food Safety News*, 7 January. Available at: <https://www.foodsafetynews.com/2017/01/salmonella-outbreak-traced-to-hazelnuts-from-oregon-farm/>.
- Brockmann, S. 2001. International outbreak of *Salmonella* Typhimurium DT104 due to contaminated sesame seed products – update from Germany (Baden-Württemberg). *Eurosurveillance* 5(33), 16 August:1699. Available at: <https://www.eurosurveillance.org/content/10.2807/esw.05.33.01699-en>.
- California Department of Public Health [CDPH]. 2002. Environmental investigation of *Salmonella* Enteritidis Phage Type 30 outbreak associated with consumption of raw almonds. [Note: document fdb%20eru%20Almond%20SE%20Rpt%202001-2002 is no longer available online from CDPH.]
- California Department of Public Health [CDPH]. 2004. Environmental investigation of *Salmonella* Enteritidis Phage Type 9c outbreak associated with consumption of raw almonds. [Note: document fdb%20eru%20Almond%20SE2004 is no longer available online from CDPH.]
- California Department of Public Health [CDPH]. 2013. Environmental investigation of the *Escherichia coli* O157:H7 outbreak in Minnesota, Michigan, Wisconsin, and Canada associated with hazelnuts – January 2011. [Note: document fdbEIRDF2011 is no longer available online from CDPH.]
- Canadian Food Inspection Agency [CFIA]. 2011. Certain bulk and prepackaged raw shelled walnuts may contain *E. coli* O157:H7 bacteria. [Health hazard alerts, April 2011] Available at: <https://www.healthycanadians.gc.ca/recall-alert-rappel-avis/inspection/2011/33575r-eng.php>.
- Cavallaro, E., K. Date, C. Medus, S. Meyer, B. Miller, C. Kim, S. Nowicki, S. Cosgrove, D. Sweat, Q. Phan, J. Flint, E. R. Daly, J. Adams, E. Hyytia-Trees, P. Gerner-Smidt, R. M. Hoekstra, C. Schwensohn, A. Langer, S. V. Sodha, M. C. Rogers, F. J. Angulo, R. V. Tauxe, I. T. Williams, and C. Barton Behravesh. 2011. *Salmonella* Typhimurium infections associated with peanut products. *N. Engl. J. Med.* 365(7):601–610.
- Centers for Disease Control and Prevention [CDC]. 2004. Outbreak of *Salmonella* serotype Enteritidis infections associated with raw almonds—United States and Canada, 2003–2004. *MMWR Weekly* 53(22):484–487. Available at: <https://www.cdc.gov/mmwr/preview/mmwrhtml/mm5322a8.htm>.
- Centers for Disease Control and Prevention [CDC]. 2007a. Multistate outbreak of *Salmonella* serotype Tennessee infections associated with peanut butter—United States 2006–2007. *MMWR Weekly* 56(21):521–524.
- Centers for Disease Control and Prevention [CDC]. 2009a. Multistate outbreak of *Salmonella* infections associated with peanut butter and peanut butter-containing products—United States, 2008–2009. *MMWR Weekly* 58(4):85–90.
- Centers for Disease Control and Prevention [CDC]. 2009b. Multistate outbreak of *Salmonella* infections linked to pistachio nuts (final update). Available at: <https://www.cdc.gov/salmonella/2009/pistachio-nuts-4-14-2009.html>.
- Centers for Disease Control and Prevention [CDC]. 2010. Multistate outbreak of *Salmonella* Typhimurium infections linked to peanut butter, 2008–2009 (final update). Available at: <https://www.cdc.gov/salmonella/typhimurium/update.html>.

- Centers for Disease Control and Prevention [CDC]. 2011a. Investigation update: Multistate outbreak of *E. coli* O157:H7 infections associated with in-shell hazelnuts (final update). Available at: <https://www.cdc.gov/ecoli/2011/hazelnuts-4-7-11.html>.
- Centers for Disease Control and Prevention [CDC]. 2011b. Multistate outbreak of human *Salmonella* Enteritidis infections linked to Turkish pine nuts (final update). Available at: <https://www.cdc.gov/salmonella/pinenuts-enteritidis/111711/index.html>.
- Centers for Disease Control and Prevention [CDC]. 2012a. Multistate outbreak of *Salmonella* Bredeney infections linked to peanut butter manufactured by Sunland, Inc. (final update). Available at: <https://www.cdc.gov/salmonella/bredeney-09-12/index.html>.
- Centers for Disease Control and Prevention [CDC]. 2012b. Multistate outbreak of *Salmonella* serotype Bovismorbificans infections associated with hummus and tahini — United States, 2011. *MMWR Weekly* 61(46):944–947.
- Centers for Disease Control and Prevention [CDC]. 2013a. Notes from the field: *Salmonella* Bredeney infections linked to a brand of peanut butter —United States, 2012. *MMWR Weekly* 62(6):107. Available at: https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6206a4.htm?s_cid=mm6206a4_e.
- Centers for Disease Control and Prevention [CDC]. 2013b. Multistate outbreak of *Salmonella* Montevideo and *Salmonella* Mbandaka infections linked to tahini sesame paste (final update). Available at: <https://www.cdc.gov/salmonella/montevideo-tahini-05-13/>.
- Centers for Disease Control and Prevention [CDC]. 2014a. Multistate outbreak of *Salmonella* Stanley infections linked to raw cashew cheese (final update). Available at: <https://www.cdc.gov/salmonella/stanley-01-14/index.html>.
- Centers for Disease Control and Prevention [CDC]. 2014b. Multistate outbreak of *Salmonella* Braenderup infections linked to nut butter manufactured by nSpired Natural Foods, Inc. (final update). Available at: <https://www.cdc.gov/salmonella/braenderup-08-14/index.html>.
- Centers for Disease Control and Prevention [CDC]. 2016a. Multistate outbreak of *Salmonella* Paratyphi B variant L(+) tartrate(+) infections linked to JEM Raw brand sprouted nut butter spreads (final update). Available at: <https://www.cdc.gov/salmonella/paratyphi-b-12-15/index.html>.
- Centers for Disease Control and Prevention [CDC]. 2016b. Multistate outbreak of *Salmonella* Montevideo and *Salmonella* Senftenberg infections linked to Wonderful Pistachios (final update). Available at: <https://www.cdc.gov/salmonella/montevideo-03-16/index.html>.
- Centers for Disease Control and Prevention [CDC]. 2018a. Multistate outbreak of *Salmonella* infections linked to Coconut Tree Brand frozen Shredded Coconut (final update). Available at: <https://www.cdc.gov/salmonella/coconut-01-18/index.html>.
- Centers for Disease Control and Prevention [CDC]. 2018b. Multistate outbreak of *Salmonella* infections linked to dried coconut (final update). Available at: <https://www.cdc.gov/salmonella/typhimurium-03-18/index.html>.
- Centers for Disease Control and Prevention [CDC]. 2019a. Outbreak of *Salmonella* infections linked to tahini from Achdut Ltd. (final update). Available at: <https://www.cdc.gov/salmonella/concord-11-18/index.html>.
- Centers for Disease Control and Prevention [CDC]. 2019b. Outbreak of *Salmonella* infections linked to Karawan brand tahini (final update). Available at: <https://www.cdc.gov/salmonella/concord-05-19/index.html>.
- Centers for Disease Control and Prevention [CDC]. 2021. *Salmonella* outbreak linked to Jule’s cashew brie. Available at: <https://www.cdc.gov/salmonella/duisburg-04-21/index.html>.

- Chan, E. S., J. Aramini, B. Ciebin, D. Middleton, R. Ahmed, M. Howes, I. Brophy, I. Mentis, F. Jamieson, F. Rodgers, M. Nazarowec-White, S. C. Pichette, J. Farrar, M. Gutierrez, W. J. Weis, L. Lior, A. Ellis, and S. Isaacs. 2002. Natural or raw almonds and an outbreak of a rare phage type of *Salmonella* Enteritidis infection. *Can. Commun. Dis. Rept.* 28(12):97–99. Available at: <https://publications.gc.ca/collections/Collection/H12-21-28-12.pdf>.
- Chou, J. H., P. H. Hwang, and M. D. Malison. 1988. An outbreak of type A foodborne botulism in Taiwan due to commercially preserved peanuts. *Int. J. Epidemiol.* 17:899–902.
- Christian, K. A., J. Schlegal, L. Ard, E. Mays, P. Curry, and M. Davis. 2007. Outbreak of *Salmonella* serotype Thompson associated with boiled peanuts—South Carolina, 2006. (abstract). In 56th Annual Epidemic Intelligence Service Conference, CDC, Atlanta, GA, p. 62. Available at: <http://www.cdc.gov/eis/downloads/2007.eis.conference.pdf>.
- de Jong, B., Andersson, Y., Giesecke, J., Hellström, L., Stamer, U., and Wollin, R. 2001. *Salmonella* Typhimurium outbreak in Sweden from contaminated jars of helva (or halva). *Eurosurveillance* 5(29), 19 July:1715. Available at: <https://www.eurosurveillance.org/content/10.2807/esw.05.29.01715-en>.
- European Centre for Disease Prevention and Control [ECDC]. 2017. Cluster of new *Salmonella* serotype cases with antigenic formula 11:z41:enz15 in four EU Member States. Available at: <https://ecdc.europa.eu/en/publications/Publications/20-mar-2017-RRA-cluster-new-Salmonella-serotypes-four-eu-member-states.pdf>.
- European Food Safety Authority [EFSA]. 2021. Multi-country outbreak of multiple *Salmonella enterica* serotypes linked to imported sesame-based products – 14 October 2021. EFSA Supporting Publications 18(10):6922E. Available at: <https://efsa.onlinelibrary.wiley.com/doi/epdf/10.2903/sp.efsa.2021.EN-6922>.
- Farber, J. 5 January 2015. Personal communication. Available from the author at: ljharris@ucdavis.edu.
- Fensterbush, J. 2021. Jules’s cashew brie Salmonella outbreak over after 20 sick. *Food Poison Journal*, July 7. Available at: <https://www.foodpoisonjournal.com/foodborne-illness-outbreaks/jules-cashew-brie-salmonella-outbreak-over-after-20-sick/>.
- Food Standards Australia New Zealand [FSANZ]. 2012. Warning and advice on raw almonds and possible *Salmonella* contamination. [Note: Original media release 23 October 2012; document is no longer available online from FSANZ.]
- Heiman Marshall, K. E., H. Booth, J. Harrang, K. Lamba, A. Folley, M. Ching-Lee, E. Hannapel, V. Greene, A. Classon, L. Whitlock, L. Shade, S. Viazis, T. Nguyen, and K. P. Neil. 2018. New product, old problem(s): multistate outbreak of *Salmonella* Paratyphi B variant L(+) tartrate(+) infections linked to raw sprouted nut butters, October 2015. *Epidemiology and Infection* 147(20):1–6.
- Isaacs, S., J. Aramini, B. Ciebin, J. A. Farrar, R. Ahmed, D. Middleton, A. U. Chandran, L. J. Harris, M. Howes, E. Chan, A. S. Pichette, K. Campbell, A. Gupta, L. Y. Lior, M. Pearce, C. Clark, F. Rodgers, F. Jamieson, I. Brophy, and A. Ellis. 2005. An international outbreak of salmonellosis associated with raw almonds contaminated with a rare phage type of *Salmonella* Enteritidis. *J. Food Prot.* 68:191–198.
- Killalea, D., L. R. Ward, D. Roberts, J. de Louvois, F. Sufi, J. M. Stuart, P. G. Wall, M. Susman, M. Schwieger, P. J. Sanderson, I. S. T. Fisher, P. S. Mead, O. N. Gill, C. L. R. Bartlett, and B. Rowe. 1996. International epidemiological and microbiological study of outbreak of *Salmonella* Agona infection from a ready to eat savoury snack—I: England and Wales and the United States. *Br. Med. J.* 313:1105–1107.

- Kirk, M. D., C. L. Little, M. Lem, M. Fyfe, D. Genobile, A. Tan, J. Threlfall, A. Paccagenella, D. Lightfoot, H. Lyi, L. McIntyre, L. Ward, D. J. Brown, S. Surnam, and I. S. T. Fisher. 2004. An outbreak due to peanuts in their shell caused by *Salmonella enterica* serotypes Stanley and Newport – sharing molecular information to solve international outbreaks. *Epidemiol. Infect.* 132:571–577.
- Ledet Müller, L., M. Hjertqvist, L. Payne, H. Pettersson, A. Olsson, L. Plym Forshell, and Y. Andersson. 2007. Cluster of *Salmonella* Enteritidis in Sweden 2005-2006 – suspected source: almonds. *Eurosurveillance* 12(6), 1 June:718. Available at: <https://www.eurosurveillance.org/content/10.2807/esm.12.06.00718-en>.
- Little, C. 2001. International outbreak of *Salmonella* Typhimurium DT104 – update from the United Kingdom. *Eurosurveillance* 5(33), 16 August:1700. Available at: <https://www.eurosurveillance.org/content/10.2807/esw.05.33.01700-en>.
- Luna, S., M. Taylor, E. Galanis, R. Asplin, J. Huffman, D. Wagner, L. Hoang, A. Paccagnella, S. Shelton, S. Ladd-Wilson, S. Seelman, B. Whitney, E. Elliot, R. Atkinson, K. Marshall, and C. Basler. 2018. Outbreak of *Salmonella* Chailey infections linked to precut coconut pieces — United States and Canada, 2017. *MMWR Weekly* 67(39):1098–1100. Available at: <https://www.cdc.gov/mmwr/volumes/67/wr/mm6739a5.htm>.
- Marler Clark LLP. 2006. 2006 outbreak of *Salmonella* Thompson infections at a pumpkin festival, South Carolina. Available at: <https://outbreakdatabase.com/outbreaks/2006-salmonella-thompson-at-a-pumpkin-festival>
- Miller, B. D., C. E. Rigdon, J. Ball, J. M. Rounds, R. F. Klos, B. M. Brennan, K. D. Arends, P. Kennelly, C. Hedberg, and K. E. Smith. 2012. Use of traceback methods to confirm the source of a multistate *Escherichia coli* O157:H7 outbreak due to in-shell hazelnuts. *J. Food Prot.* 75:320–327.
- New Zealand Public Health Surveillance [NZPHS]. 2013. Human *Salmonella* isolates, 2012. Available at: https://surv.esr.cri.nz/enteric_reference/human_salmonella.php?we_objectID=3315.
- News Desk, 2020. U.S. among countries sent Brazil nuts contaminated with *Salmonella*. *Food Safety News*, August 27. Available at: <https://www.foodsafetynews.com/2020/08/u-s-among-countries-sent-brazil-nuts-contaminated-with-salmonella/>.
- Ngan, N. T. T., V. N. A. Tho, D. T. N. Khanh, V. T. T. Hien, J. N. Day, N. N. Sang, H. T. Tam, H. T. C. Thanh, and L. Q. Hung. 2020. Botulism outbreak after the consumption of vegetarian pâté in the south of Viet Nam. *Wellcome Open Res.* 5:257. Available at: <https://doi.org/10.12688/wellcomeopenres.16372.3>.
- Obenhuber, D. C. 2020. Back-to-back outbreaks in frozen and dried imported coconut. *FoodSafety Magazine*, October 19. Available at: <https://www.foodsafetymagazine.com/magazine-archive1/octobernovember-2020/back-to-back-outbreaks-in-frozen-and-dried-imported-coconut/#References>.
- O’Grady, K. A., J. Powling, A. Tan, M. Valcanis, D. Lightfoot, J. Gregory, K. Lalor, R. Guy, B. Ingle, R. Andrews, S. Crerar, and R. Stafford. 2001. *Salmonella* Typhimurium DT104 – Australia, Europe. Archive no. 20010822.1980. Available at: <https://www.promedmail.org>.
- Oregon Health Authority [OHA]. 2017. Communicable disease outbreaks, 2016. *CD Summary* 66(8). Available at: <https://www.oregon.gov/oha/PH/DISEASES/CONDITIONS/COMMUNICABLEDISEASE/CDSUMMARYNEWSLETTER/Documents/2017/ohd6608.pdf>.

- OzFoodNet Working Group [OzFoodNet]. 2010. OzFoodNet quarterly report, 1 April to 30 June 2010. Foodborne and suspected foodborne disease outbreaks. *Commun. Dis. Intell.* 34(3):345–354. Available at: <https://www1.health.gov.au/internet/main/publishing.nsf/Content/cda-cdi3403o.htm>.
- OzFoodNet Working Group [OzFoodNet]. 2013. OzFoodNet quarterly report, 1 October to 31 December 2012. *Salmonella* Typhimurium PT 3 associated with the consumption of raw almonds. *Commun. Dis. Intell.* 37(4):418–426. Available at: <https://www1.health.gov.au/internet/main/publishing.nsf/Content/cda-cdi3704g.htm>.
- Paine, S., C. Thornley, M. Wilson, M. Dufour, K. Sexton, J. Miller, G. King, S. Bell, D. Bandaranayake, and G. Mackereth. 2014. An outbreak of multiple serotypes of *Salmonella* in New Zealand linked to consumption of contaminated tahini imported from Turkey. *Foodborne Path. Dis.* 11(11):887–892.
- ProMED-mail. 2006. Salmonellosis, boiled peanuts – USA (South Carolina). Archive no. 20061102.3135. Available at: <https://www.promedmail.org>.
- Public Health Agency of Canada [PHAC]. 2011. Public health advisory: *E. coli* outbreak. Public Health Agency of Canada press release April 4. [Note: Document on walnut-associated outbreak is no longer available online.]
- Scheil, W., S. Cameron, C. Dalton, C. Murray, and D. Wilson. 1998. A South Australian *Salmonella* Mbandaka outbreak investigation using a database to select controls. *Aust. N.Z. J. Public Health* 22:536–539.
- Scheil, W., C. Dalton, S. Cameron, and C. Murray. 1997. A multi-state *Salmonella* Mbandaka outbreak associated with peanut butter: the South Australian experience. *J. Clin. Epidemiol.* 50 (Supp. 1):18S.
- Schmitt, N., G. Yu, R. Greve, and L. McIntyre. 2018. Outbreak of *S. Weltevreden* linked to fermented cashew nut cheese in Victoria, BC. *Environmental Health Review* 61(3):74–81. Available at: <https://pubs.ciphi.ca/doi/10.5864/d2018-017>.
- Semple, A. B., W. H. Parry, and A. J. Graham. 1961. Paratyphoid fever traced to desiccated coconut. *Lancet* 278(7198):364–365.
- Sheppard, Y. D., D. Middleton, Y. Whitfield, F. Tyndel, S. Haider, J. Spiegelman, R. H. Swartz, M. P. Nelder, S. L. Baker, L. Landry, R. MacEachern, S. Deamond, L. Ross, G. Peters, M. Baird, D. Rose, G. Sanders, and J. W. Austin. 2012. Intestinal toxemia botulism in 3 adults, Ontario, Canada, 2006–2008. *Emerg. Infect. Dis.* 18(1):1–6.
- Sheth, A. N., M. Hoekstra, N. Patel, G. Ewald, C. Lord, C. Clarke, E. Villamil, K. Niksich, C. Bopp, T.-A. Nguyen, D. Zink, and M. Lynch. 2011. A national outbreak of *Salmonella* serotype Tennessee infections from contaminated peanut butter: a new food vehicle for salmonellosis in the United States. *Clin. Infect. Dis.* 53:356–362.
- Shohat, T., M. S. Green, D. Merom, O. N. Gill, A. Reisfeld, A. Matas, D. Blau, N. Gal, and P. E. Slater. 1996. International epidemiological and microbiological study of outbreak of *Salmonella* Agona infection from a ready to eat savoury snack—II: Israel. *Br. Med. J.* 313:1107–1109.
- Tauxe, R. V., S. J. O’Brian, and M. Kirk. 2008. Outbreaks of food-borne diseases related to the international food trade. p. 69–112. In M. P. Doyle, and M. C. Erickson (ed.), *Imported food: Microbiological issues and challenges*. ASM Press, Washington, DC.
- Threlfall, E. J., M. D. Hampton, L. R. Ward, and B. Rowe, 1996. Application of pulsed-field gel electrophoresis to an international outbreak of *Salmonella agona*. *Emerg. Infect. Dis.* 2:130–132.
- Tsai, S. J., Y. C. Chang, J. D. Wang, and J. H. Chou. 1990. Outbreak of type A botulism caused by a commercial food product in Taiwan: clinical and epidemiological investigations. *Zhonghua Yi Xue Za Zhi (Taipei)* [Chinese Med. J.] 46:43–48. (In Chinese; English abstract.)

- Unicomb, L. E., G. Simmons, T. Merritt, J. Gregory, C. Nicol, P. Jelfs, M. Kirk, A. Tan, R. Thomson, J. Adamopoulos, C. L. Little, A. Currie, and C. B. Dalton. 2005. Sesame seed products contaminated with *Salmonella*: three outbreaks associated with tahini. *Epidemiol. Infect.* 133:1065–1072.
- U.S. Food and Drug Administration [US FDA]. 2014. FDA investigation summary – Multistate outbreak of *Salmonella* Senftenberg infections associated with pistachios from a California roaster. Available at: <https://wayback.archive-it.org/7993/20171114154922/https://www.fda.gov/Food/RecallsOutbreaksEmergencies/Outbreaks/ucm386377.htm>.
- U.S. Food and Drug Administration [US FDA]. 2016a. FDA investigated multistate outbreak of *Salmonella* infections linked to raw nut butter products. Available at: <https://www.fda.gov/food/outbreaks-foodborne-illness/fda-investigated-multistate-outbreak-salmonella-infections-linked-raw-nut-butter-products#update>.
- U.S. Food and Drug Administration [US FDA]. 2016b. FDA investigated multistate outbreak of *Salmonella* infections linked to Wonderful Pistachio. Available at: <https://www.fda.gov/food/outbreaks-foodborne-illness/fda-investigated-multistate-outbreak-salmonella-infections-linked-wonderful-pistachio>.
- U.S. Food and Drug Administration [US FDA]. 2016c. Paramount Farms 10/7/16 warning letter, October 7, 2016. Available at: <https://wayback.archive-it.org/7993/20190424200426/https://www.fda.gov/ICECI/EnforcementActions/WarningLetters/2016/ucm524491.htm>.
- U.S. Food and Drug Administration [US FDA]. 2019. Outbreak investigation of *Salmonella* Concord linked to tahini, winter 2018. Available at: <https://www.fda.gov/food/outbreaks-foodborne-illness/outbreak-investigation-salmonella-concord-linked-tahini-winter-2018>.
- U.S. Food and Drug Administration [US FDA]. 2021a. Outbreak investigation of *Salmonella*: Jules’s Cashew Brie (April 2021). Available at: <https://www.fda.gov/food/outbreaks-foodborne-illness/outbreak-investigation-salmonella-jules-cashew-brie-april-2021>.
- U.S. Food and Drug Administration [US FDA]. 2021b. Jules’s Foods MARCS-CMS 615218 warning letter, October 19, 2021. Available at: <https://www.fda.gov/inspections-compliance-enforcement-and-criminal-investigations/warning-letters/jules-foods-615218-10192021>.
- U.S. Food and Drug Administration [US FDA]. 2022. Outbreak investigation of *Salmonella*: peanut butter (May 2022). Available at: <https://www.fda.gov/food/outbreaks-foodborne-illness/outbreak-investigation-salmonella-peanut-butter-may-2022>.
- Ward, L., S. Brusin, G. Duckworth, and S. O’Brien. 1999. *Salmonella* java phage type Dundee—rise in cases in England: update. *Eurosurveillance* 3(12), 18 March:1435. Available at: <https://www.eurosurveillance.org/content/10.2807/esw.03.12.01435-en>.
- Whitham, H. K., P. Sundararaman, D. Dewey-Mattia, K. Manikonda, K. E. Marshall, P. M. Griffin, B. L. Gleason, S. Subramhanya, and S. J. Crowe. 2021. Novel outbreak-associated food vehicles, United States. *Emerg. Inf. Dis.* 27(10):2554–2559. Available at: https://wwwnc.cdc.gov/eid/article/27/10/20-4080_article.
- Whitworth, J. 2014. *Salmonella* from cashews sickens 14. *Food Quality News*, January 6. Available at: <https://www.foodnavigator.com/Article/2014/01/06/The-Cultured-Kitchen-recalls-cashew-cheese-over-Salmonella-concerns>.

- Whitworth, J. 2020a. Nearly 100 sick in UK outbreak linked to nuts; some sent to U.S. *Food Safety News*, August 28. Available at: <https://www.foodsafetynews.com/2020/08/nearly-100-sick-in-uk-outbreak-linked-to-nuts/#more-196956>. [Brazil nuts]
- Whitworth, J. 2020b. Study details first botulism outbreak in Vietnam. *Food Safety News*, December 18. Available at: <https://www.foodsafetynews.com/2020/12/study-details-first-botulism-outbreak-in-vietnam/>.
- Wilson, M. M., and E. F. MacKenzie. 1955. Typhoid fever and salmonellosis due to the consumption of infected desiccated coconut. *J. Appl. Bacteriol.* 18:510–521.