

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) | S. Enteritidis PT 30 | 2000–01 | 168 | yes | Canada, USA | CDPH, 2002; Chan et al., 2002; Isaacs et al., 2005 |
| | raw whole (California) | S. Enteritidis PT 9c | 2004 | 47 | no | Canada, USA | CDC, 2004; CDPH, 2004 |
| | raw whole (California?) | S. Enteritidis NST 3+ (aka PT 30) | 2005–06 | 15 | no | Sweden | Ledet Müller et al., 2007 |
| | raw whole (Australia) | S. Typhimurium | 2012 | 27 | yes | Australia | FSANZ, 2012; Whitworth, 2012 (and personal communication) |
| | almond and/or peanut butter | S. Braenderup | 2014 | 6 | no (yes from environment samples) | USA (CT, IA, NM, TN, TX) | CDC, 2014b |
| | sprouted almond and cashew-almond spreads | S. Paratyphi B (aka S. Java) | 2015 | 13 (all nut spreads) | no | USA (CA, CO, GA, HI, ID, IL, ME, NC, NJ, OR) | CDC, 2016a; US FDA 2016a |
| Cashew | peanut/cashew mix (not stated) | S. Typhimurium PT 170 | 2010 | 19 | yes | Australia | OzFoodNet, 2010 |
| | raw cashew “cheese” ¹ (California; cashews from SE Asia) | S. Stanley | 2013 | 17 | yes | USA (CA, NV, WY) | CDC, 2014a; Whitworth, 2014 |
| | sprouted cashew-almond spreads | S. Paratyphi B (aka S. Java) | 2015 | 13 (all nut spreads) | no | USA (CA, CO, GA, HI, ID, IL, ME, NC, NJ, OR) | CDC, 2016a; US FDA, 2016a |

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|-------------------------|--|--|---------|--------------------------------|---|--|--|
| Coconut | desiccated (Papua New Guinea) | S. Typhi, S. Senftenberg and possibly others | 1953 | >50 (est. from epi curve) | yes | Australia | Wilson and Mackenzie, 1955 |
| | desiccated (Sri Lanka) | S. Paratyphi B | 1960–61 | 3 | yes | England | Semple et al., 1961 |
| | desiccated (not stated) | S. Java PT Dundee | 1999 | 18 | yes | United Kingdom | Ward et al., 1999 |
| | frozen, shredded (Vietnam) | S. I 4,[5],12:b:- | 2017–18 | 26 (USA) 1 (Canada) | yes | USA (CA, CO, CT, MA, NJ, NY, OK, PA, WA), Canada | CDC, 2018a |
| | | S. Newport | | 1 (USA) | | | |
| dried, raw (Sri Lanka?) | S. Typhimurium | 2017–18 | 14 | yes | USA (CA, CO, CT, ID, MO, OR, TX, UT + DC) | CDC, 2018b | |
| 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) | S. Typhimurium | 2016 | 5 | yes | USA (OR) | Beach, 2017; OHA, 2017 |
| | sprouted hazelnut spreads | S. Paratyphi B (aka S. Java) | 2015 | 13 (all nut spreads) | no | USA (CA, CO, GA, HI, ID, IL, ME, NC, NJ, OR) | CDC, 2016a; US FDA 2016a |
| Pine nut | whole, bulk (Turkey) | S. Enteritidis | 2011 | 43 | yes | USA (MD, NY, NJ, PA, VA) | CDC, 2011b |
| Pistachio | roasted (California) | S. Senftenberg | 2013 | 8 | yes | USA (CA, KS, MA, MD, PA, WI) | US FDA, 2014 |
| | roasted inshell and shelled (California) | S. Montevideo S. Senftenberg | 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; Health and Safety Watch, 2011; PHAC, 2011 |

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., 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, 2007a, 2007b; 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, 2009, 2010 |
| | peanut butter (USA) | <i>S. Bredeney</i> | 2012 | 42 | no | USA (20 states) | CDC, 2012a, 2013a |
| | peanut and/or almond butter | <i>S. Braenderup</i> | 2014 | 6 | no (yes from environment samples) | USA (CT, IA, NM, TN, TX) | CDC, 2014b |

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.

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| 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– 2017 | 40 | yes | EU Member States (Greece, Germany, Czech Republic, Luxembourg) | ECDC, 2017 |

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