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Larry Beuchat



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Overview of Research Program

Richardson, A.N., L.R. Beuchat, S. Lambert, D. Williams, and M.A. Smith. 2010. Comparison of virulence of three strains of *Cronobacter sakazakii* in neonatal CD-1 mice. *J. Food Prot.* 73:849-854.

Dr. Beuchat's research is in the area of food microbiology.

Pathogenic bacteria under study include *Salmonella*, *Escherichia coli* O157:H7 and *Listeria monocytogenes*. Processes and technologies to eliminate or control the growth of these pathogens in foods are being developed and evaluated.

Growth, survival, death of and toxin production by pathogens in foods as influenced by thermal treatment, pH, acidity, chemical preservatives, water activity and modified atmosphere are being studied.

Research is also being done to develop a selective medium for preservative-resistant yeasts.

New and conventional procedures for killing heat-resistant ascospores of molds in acid foods are being evaluated.

Publications

Books

Doyle, M. P., L. R. Beuchat and T. J. Montville (ed). 2001. *Food Microbiology: Fundamentals and Frontiers, 2nd edition*. Am. Soc. Microbiol., Washington, D.C. 872 pp.

Beuchat, L. R. 2001. Traditional fermented foods. In: *Food Microbiology: Fundamentals and Frontiers, 2nd edition*. (M. P. Doyle, L. R. Beuchat and T. J. Montville, ed.) Am. Soc. Microbiology, Washington, D.C. pp. 701-719.

Deak, T. and L. R. Beuchat. 1996. Handbook of Food Spoilage Yeasts. CRC Press, Inc., Boca Raton, FL. 210 pp.

Refereed publications (2010-present)

Beuchat LR, Mann DA, Kelly CA, Ortega YR. 2017. Retention of viability of *Salmonella* in sucrose as affected by type of inoculum, water activity, and storage temperature. J Food Prot. 80: 1408-1414.

Bang, J., M. Choi, Son, L. R. Beuchat, Y. Kim, H. Kim, and J.-H. Ryu. 2016. Sanitizing radish seeds by simultaneous treatments with gaseous chlorine dioxide, high relative humidity, and mild temperature. Int. J. Food Microbiol. 237:150-156.

Beuchat, L.R. and D.A. Mann. 2016. Comparison of new and traditional culture-dependent media for enumerating foodborne yeasts and molds. J. Food Prot. 79:95-111.

Choi, S., L.R. Beuchat, H. Kim, and J.-H. Ryu. 2016. Viability of sprout seeds as affected by treatment with aqueous chlorine dioxide and dry heat, and reduction of *Escherichia coli* O157:H7 and *Salmonella enterica* on pak choi seeds by sequential treatment with chlorine dioxide, drying, and dry heat. Food Microbiol. 54:127-132.

Son, H., Park, L. R. Beuchat, H. Kim, and J.-H. Ryu. 2016. Inhibition of *Staphylococcus aureus* by antimicrobial biofilms formed by competitive exclusion microorganisms on stainless steel. Food Microbiol. 238:165-171

Beuchat, L.R. and D.A. Mann. 2015. Survival of *Salmonella* in cookie and cracker sandwiches containing inoculated, low-water activity fillings. J. Food Prot. 78:1828-1834.

Choi, S., H. Jun, J. Bang, S.H. Chung, Y. Kim, B.S. Kim, H. Kim, L.R. Beuchat, and J.H. Ryu. 2015. Behaviour of *Aspergillus flavus* and *Fusarium graminearum* on rice as affected by degree of milling, temperature, and relative humidity during storage. Food Microbiol. 46:307-313.

Choi, S., S. Park, Y. Kim, B.S. Kim, L.R. Beuchat, K. Hoikyung, and J.-H. Ryu. 2015. Reduction of *Salmonella enterica* on the surface of eggshells by sequential treatment with aqueous chlorine dioxide and drying. *Int. J. Food Microbiol.* 210:84-87.

Park, S., S. Choi, H. Kim, Y. Kim, B.S. Kim, L.R. Beuchat, and J.H. Ryu. 2015. Fate of mesophilic aerobic bacteria and *Salmonella enterica* on the surface of eggs as affected by chicken feces, storage temperature, and relative humidity. *Food Microbiol.* 48:200-205.

Seo, H.S., L.R. Beuchat, H. Kim, and J.-H. Ryu. 2015. Development of an experimental apparatus and protocol for determining antimicrobial activities of gaseous plant essential oils. *Int. J. Food Microbiol.* 215:95-100.

Bang, J., A. Hong, H. Kim, L.R. Beuchat, M.S. Rhee, Y. Kim, and J.-H. Ryu. 2014. Inactivation of *Escherichia coli* O157:H7 in biofilm on food-contact surfaces by sequential treatments of aqueous chlorine dioxide and drying. *Int. J. Food Microbiol.* 191:129-134.

Beuchat, L.R. and D.A. Mann. 2014. Survival of *Salmonella* on dried fruits and in aqueous dried fruit homogenates as affected by temperature. *J. Food Prot.* 77:1102-1109.

Choi, S., H. Jun, J. Bang, S.-H. Chung, Y. Kim, B.-s. Kim, H. Kim, L.R. Beuchat, and J.-H. Ryu. 2014. Behaviour of *Aspergillus flavus* and *Fusarium graminearum* on rice as affected by degree of milling, temperature, and relative humidity during storage. *Food Microbiol.* 46:307-313.

Choi, S., H. Kim, Y. Kim, B.S. Kim, L.R. Beuchat, and J.H. Ryu. 2014. Fate of *Bacillus cereus* and naturally occurring microbiota on milled rice as affected by temperature and relative humidity. *Food Microbiol.* 38:122-127.

Kim, B., Y. Bang, N. Kim, Y. Kim, B.-S. Kim, L.R. Beuchat, and J.-H. Ryu. 2014. *Bacillus cereus* and *Bacillus thuringiensis* spores in Korean rice: Prevalence and toxin production as affected by production area and degree of milling. *Food Microbiol.* 42:89-94.

Nam, H., H.-S. Seo, J. Bang, H. Kim, L.R. Beuchat, and J.-H. Ryu. 2014. Efficacy of gaseous chlorine dioxide in inactivating *Bacillus cereus* spores attached to and in a biofilm on stainless steel. *Int. J. Food Microbiol.* 188:122-127.

Ryu, J.-H., M. Kim, E.-G. Kim, L.R. Beuchat, and H. Kim. 2014. Comparison of the microbiological quality of environmentally friendly and conventionally grown vegetables sold at retail markets in Korea. *J. Food Sci.* 79:M1739-M1744.

Bang, J., L. R. Beuchat, M. Gu, H.-I. Chang, and J.-H. Ryu. 2013. Development of a random genomic DNA microarray for the detection and identification of *Listeria monocytogenes* in milk. *Int. J. Food Microbiol.* 161:134-141.

Beuchat, L. R., D. A. Mann, and W. Q. Alali. 2013. Efficacy of sanitizers in reducing *Salmonella* on pecan nutmeats during cracking and shelling. *J. Food Prot.* 76:770-778.

Beuchat, L.R., E. Komitopoulou, H. Beckers, R.P. Betts, F. Bourdichon, S. Fanning, H.M. Joosten, and B.H. Ter Kuile. 2013. Low-water activity foods: Increased concern as vehicles of foodborne pathogens. *J. Food Prot.* 76:150-172.

Erickson, M.C., J. Liao, A.S. Payton, C.C. Webb, L. Ma, G. Zhang, I. Flitcroft, M.P. Doyle, and L.R. Beuchat. 2013. Fate of *Escherichia coli* O157:H7 and *Salmonella* in soil and lettuce roots as affected by potential home gardening practices. *J. Sci. Food Agric.* 93:3841-3849.

Gomez-Lopez, V.M., A. Marin, A. Allende, L.R. Beuchat, and M.I. Gil. 2013. Postharvest handling conditions affect internalization of *Salmonella* in baby spinach during washing. *J. Food Prot.* 76:1145-1151.

Jun, H., J. Kim, J. Bang, H. Kim, L. R. Beuchat, and J.-H. Ryu. 2013. Combined effects of plant extracts in inhibiting the growth of *Bacillus cereus* in reconstituted infant rice cereal. *Int. J. Food Microbiol.* 160:260-266.

Kim, S., J. Bang, H. Kim, L.R. Beuchat, and J.-H. Ryu. 2013. Inactivation of *Escherichia coli* O157:H7 on stainless steel upon exposure to *Paenibacillus polymyxa* biofilms. *Int. J. Food Microbiol.* 167:328-336.

- Beuchat, L.R., D.A. Mann, and W.Q. Alali. 2012. Evaluation of sanitizers for inactivating *Salmonella* on in-shell pecans and pecan nutmeats. *J. Food Prot.* 75:1930-1938.
- Alali, W.Q., D.A. Mann, and L.R. Beuchat. 2012. Viability of *Salmonella* and *Listeria monocytogenes* in delicatessen salads and hummus as affected by sodium content and storage temperature. *J. Food Prot.* 75:1043-1056.
- Brooks, J.T., B.T. Matyas, J. Fontana, M.A. DeGroot, L.R. Beuchat, M. Hoekstra, and C.R. Friedman. 2012. An outbreak of *Salmonella* serotype Typhimurium infections with an unusually long incubation period. *Foodborne Path. Dis.* 9:245-248.
- Kim, J., J. Bang, L.R. Beuchat, H. Kim, and J.-H. Ryu. 2012. Controlled fermentation of kimchi using naturally occurring antimicrobial agents. *Food Microbiol.* 32:20-31.
- Kim, H., H. Kim, J. Bang, Y. Kim, L.R. Beuchat, and J.-H. Ryu. 2012. Reduction of *Bacillus cereus* spores in sikhye, a traditional Korean rice beverage, by modified tyndallization processes with and without carbon dioxide injection. *Lett. Appl. Microbiol.* 55:218-223.
- Seo, H.S., J. Bang, H. Kim, L.R. Beuchat, S.Y. Cho, and J.H. Ryu. 2012. Development of an antimicrobial sachet containing encapsulated allyl isothiocyanate to inactivate *Escherichia coli* O157:H7 on spinach leaves. *Int. J. Food Microbiol.* 159:136-143.
- Bang, J., H. Kim, H. Kim, L.R. Beuchat, Y. Kim, and J.-H. Ryu. 2011. Reduction of *Escherichia coli* O157:H7 on radish seeds by sequential application of aqueous chlorine dioxide and dry-heat treatment. *Lett. Appl. Microbiol.* 53:424-429.
- Bang, J., H. Kim, H. Kim, L.R. Beuchat, and J.-H. Ryu. 2011. Combined effects of chlorine dioxide, drying, and dry heat treatments in inactivating microorganisms on radish seeds. *Food Microbiol.* 28:114-118.

Bang, J., H. Kim, H. Kim, L.R. Beuchat, and J.-H. Ryu. 2011. Inactivation of *Escherichia coli* O157:H7 on radish seeds by sequential treatments with chlorine dioxide, drying, and dry heat without loss of seed viability. *Appl. Environ. Microbiol.* 77:6680-6686.

Beuchat, L.R. and D.A. Mann. 2011. Inactivation of *Salmonella* on in-shell pecans during conditioning treatments preceding cracking and shelling. *J. Food Prot.* 74:588-602.

Choi, S., J. Bang, H. Kim, L.R. Beuchat, and J.-H. Ryu. 2011. Survival and colonization of *Escherichia coli* O157:H7 on spinach leaves as affected by inoculum level and carrier, temperature, and relative humidity. *J. Appl. Microbiol.* 111:1465-1472.

Beuchat, L.R., and D.A. Mann. 2011. Inactivation of *Salmonella* on pecan nutmeats by hot air treatment and oil roasting. *J. Food Prot.* 74:1441-1450.

Bang, J., H. Kim, H. Kim, L.R. Beuchat, and J.H. Ryu. 2011. Combined effects of chlorine dioxide, drying, and dry heat treatments in inactivating microorganisms on radish seeds. *Food Microbiol.* 28:114-118.

Beuchat, L.R. and D.A. Mann. 2011. Inactivation of *Salmonella* on in-shell pecans during conditioning treatments preceding cracking and shelling. *J. Food Prot.* 74:588-602.

Bang, J., L.R. Beuchat, M.B. Gu, H.I. Chang, and J.-H. Ryu. 2010. Identification of *Yersinia enterocolitica* using a random genomic DNA microarray chip. *Lett. Appl. Microbiol.* 51:665-560.

Beuchat, L.R. and D.A. Mann. 2010. Factors affecting infiltration and survival of *Salmonella* on in-shell pecans and pecan nutmeats. *J. Food Prot.* 73:1257-1268.

Beuchat, L.R. and D.A. Mann. 2010. Survival and growth of *Salmonella* in high-moisture pecan nutmeats, in-shell pecans, inedible nut components, and orchard soil. *J. Food Prot.* 73:1975-1985.

Erickson, M.C., J. Liao, A.S. Payton, D.G. Riley, C.C. Webb, L.E. Davey, S. Kimbrel, L. Ma, G.D. Zhang, I. Flitcroft, M.P. Doyle, and L.R. Beuchat. 2010. Preharvest internalization of *Escherichia coli* O157:H7 into lettuce leaves, as affected by insect and physical damage. *J. Food Prot.* 73:1809-1816.

Kim, H., H. Kim, J. Bang, L.R. Beuchat, and J.-H. Ryu. 2010. Synergistic effect of chlorine dioxide and drying treatments for inactivating *Escherichia coli* O157:H7 on radish seeds. *J. Food Prot.* 73:1225-1230.

Richardson, A.N., L.R. Beuchat, S. Lambert, D. Williams, and M.A. Smith. 2010. Comparison of virulence of three strains of *Cronobacter sakazakii* in neonatal CD-1 mice. *J. Food Prot.* 73:849-854.