

# Antibiotic-resistant listeria in unprocessed salad not as widespread as feared

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Antibiotic-resistant strains of the food-poisoning microbe *Listeria monocytogenes* in unprocessed salad products is not quite as widespread as scientists originally suspected. A new study from Malaysia published in the *International Journal of Food Safety, Nutrition and Public Health* reveals that strains of the microbe falling into six distinct groups can all be found on such products, but 82 percent of those strains succumb to at least one of sixteen common antibiotics used in veterinary and human listeriosis treatment.

The idea of [antibiotic resistance](#) has been with us since the first antibiotic was prescribed and bacteria have evolved to combat the toxic effects of the drugs on them. However, the spread of resistance in [strains](#) of disease-causing bacteria has been of growing concern in recent years as so-called "superbugs" that are resistant to even the most potent of prescriptions are becoming more prevalent. There is therefore a pressing need for novel [antibiotics](#) with unusual modes of action to be discovered and developed by the pharmaceutical industry.

Now, Jeyaletchumi Ponniah of Malaysia's Ministry of Health in Putrajaya, and colleagues at University College Sedaya International University, the Universiti Putra Malaysia, Kyoto University, Japan and Pradeep Malakar of the Institute of Food Research in Norwich, UK, have isolated 71 different strains of *Listeria* from minimally processed salad products from Malaysia. These were characterised using the tools of molecular biology: serotyping, random amplified polymorphic DNA-polymerase chain reaction analysis (RAPD-PCR) and antimicrobial

susceptibility testing. All but one of the strains belonged to serotype 4, just one lay in serotype 1, the latter also existed as a solitary isolate, while the others could be categorised in one of six composite profile groups.

The team tested 14 antibiotics against these strains; excluding nalidixic acid and oxacillin for which *Listeria* has natural resistance. They found resistance to be high only against cephalixin. None of the strains could withstand chemical attack from imipenem and kanamycin. Those strains that displayed higher resistance to some of the other antibiotics had been sourced from farms known to have livestock fed or medicated on antibiotics.

"The antimicrobial susceptibility testing indicates that the overall incidence of resistance in *L. monocytogenes* isolated from vegetables is still relatively low," the team says. "However it concurs with earlier findings that there are strains of the microbe, albeit in low numbers, that are resistant to a number of antibiotics." The team concludes that fingerprinting and serotyping are useful tools for classifying *Listeria* and that they should be used for ongoing monitoring and screening for emergent or increased resistance to antibiotic drugs.

**More information:** Ponniah, J., Robin, T., Radu, S., Cheah, Y.K., Ghazali, F.M., Nishibuchi, M., Nakaguchi, Y. and Malakar, P. (2015) 'Characterisation of *L. monocytogenes* strains isolated from salad vegetables', *Int. J. Food Safety, Nutrition and Public Health*, Vol. 5, No. 2, pp.137–150.

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