**Salmonella warning over supermarket bags of salad: Broken leaves can help bug to grow... and washing them won't make a difference, experts warn**

* **Broken leaves can boost the growth of the food poisoning bug 2,400-fold**
* **Experts are so concerned they tell households to avoid bagged salads**
* **Strain was so virulent it could be caught from the packaging alone**

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Bags of prepared salad are a breeding ground for deadly salmonella, scientists have found.

Broken leaves in the sealed bags can leak fluid, which can boost the growth of the food poisoning bug 2,400-fold.

And the salmonella attaches itself to the salad leaves so well that even rinsing them vigorously does not remove it.

Experts are so concerned that they have now warned households to avoid bagged salad if possible, or to wash it thoroughly and not to let it get warm.

Lead scientist Dr Primrose Freestone, from the University of Leicester's department of infection, immunity and inflammation, said: 'This strongly emphasises the need for salad leaf growers to maintain high food safety standards, as even a few salmonella cells in a salad bag at the time of purchase could become many thousands by the time a bag of salad leaves reaches its use-by date, even if kept refrigerated.

'Even small traces of juices released from damaged leaves can make the pathogen grow better and become more able to cause disease.'

It can take just a small amount of damage in bagged leaves to raise the risk of salmonella, which causes extreme fever, vomiting and diarrhoea and usually lasts for a week.

Although the bug is unpleasant for most, it can be deadly for the elderly, very young children and those with vulnerable immune systems, such as cancer patients.

The Leicester study is one of the first to look at the risk of bugs within lettuce after it is bagged.

The researchers did not measure levels of salmonella in purchased salad, but investigated the way the bacteria grew on damaged leaves and attached itself to plastic bag surfaces.

Cos, baby green oak, red romaine lettuce, spinach, and red chard obtained from commercially available bag mixes were all used in the tests.

The experiment showed that 'juice' from broken leaves more than doubled salmonella growth in water and, when added to a nutrient supporting salmonella, by more than 2,400 times.

The juice also made the salmonella more virulent, raising the potential threat to people. Plastic bags were cut into 2cm long sections and tested to see how well salmonella formed clinging 'biofilms' on their surfaces. Juice from the leaves boosts the bug's ability to attach.

It means if salmonella present in the salad was virulent enough to infect someone, they could contract it just from the packaging. The bacteria even multiplied on the salad leaves when they were kept properly stored cold in the fridge. It only took two-hundreths of a teaspoon of juice to raise the threat of infection.

In response to the findings, Dr Kimon Karatzas, assistant professor in food microbiology at the University of Reading, said: 'Avoiding fresh produce is not a solution, but if possible, it would be preferable to buy uncut fresh produce over chopped, and to always wash it before you eat – even the ones that are already washed.

'Furthermore, keeping these foods in the refrigerator is important.'

In recent years there have been a number of food poisoning outbreaks associated with fresh salad produce contaminated with salmonella and E.coli in Europe.

Dr Freestone said the research, published in the journal Applied and Environmental Microbiology, also served as a reminder to consume bagged salad as soon as possible after opening.

Food microbiologist Professor Martin Adams, from the University of Surrey, said he was concerned to hear that the salmonella strain used in the study could grow even in the cold environs of a fridge, which is typically kept at 4C.

He advised: 'It is very important that salad vegetables are washed thoroughly before consumption.

'Although prepared bagged salads have already been washed, another washing before use would give an added level of reassurance.'

Read more: <http://www.dailymail.co.uk/health/article-3948162/Salmonella-warning-supermarket-bags-salad-Broken-leaves-help-bug-grow-washing-won-t-make-difference-experts-warn.html#ixzz4W1CG7c51>   
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