

E. coli an unlikely contaminant of plant vascular systems

April 1 2011

A technique developed by U.S. Department of Agriculture (USDA) scientists for tracking pathogens has helped confirm that *Escherichia coli* is not likely to contaminate the internal vascular structure of field-grown leafy greens and thus increase the incidence of foodborne illness.

Agricultural Research Service (ARS) microbiologist Manan Sharma wanted to find out if [plant roots](#) could draw in *E. coli* pathogens from the soil when taking in nutrients and water. He and colleagues modified several types of *E. coli*-including some highly pathogenic strains that cause foodborne illness-by adding a gene for fluorescence. This allowed them to track the pathogen's journey from the field to the produce.

ARS is USDA's chief intramural scientific research agency, and this work supports the USDA priority of ensuring food safety.

The team, which is located at the ARS Environmental Microbial and Food Safety Laboratory in Beltsville, Md., confirmed that the pathogenic *E. coli* could survive in the soil for up to 28 days. They also observed that the fluorescent *E. coli* cells were capable of migrating into the roots of spinach plants.

The researchers also examined baby spinach plants over the course of 28 days after germination to see if any of the *E. coli* strains were taken up past the roots and into the plant's interior structures. For this part of the study, they grew baby spinach in pasteurized soil and hydroponic media.

At day 28, there was no evidence that the *E. coli* had become "internalized" in leaves or shoots of baby spinach plants grown in the pasteurized [soil](#). *E. coli* could be detected in hydroponically-grown [spinach](#) samples, but its survival in shoot tissue was sporadic 28 days after the [plants](#) had germinated.

These findings strongly suggest that although *E. coli* can survive in soils, it's highly unlikely that foodborne illness would result from the [bacterium](#) becoming "internalized" through roots in leafy produce.

Results from this work were published in the *Journal of Food Protection*.

More information: [Read more](#) about this work in Agricultural Research magazine's April 2011 issue, which focuses on ARS food safety research

Provided by United States Department of Agriculture

Citation: *E. coli* an unlikely contaminant of plant vascular systems (2011, April 1) retrieved 27 April 2024 from <https://phys.org/news/2011-04-coli-contaminant-vascular.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.