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Scientific Challenges and Cost-Effective Management of Risks Associated with Implementation of Produce Safety Regulations

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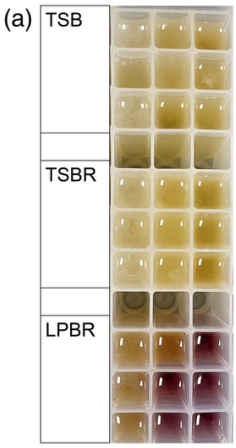
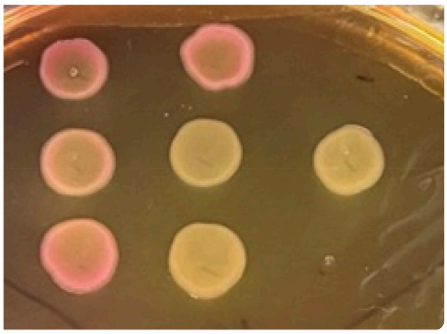
RESEARCH SUMMARIES

DEVELOPMENT AND EVALUATION OF A MODIFIED MOST PROBABLE NUMBER (MPN) METHOD FOR ENUMERATING RIFAMPICIN-RESISTANT ESCHERICHIA COLI IN AGRICULTURAL, FOOD, AND ENVIRONMENTAL SAMPLES





LPBR exhibited a significant advantage over the TSBR-P MPN assay: it specifically enriched *E. coli* TVS353 over other background microflora, and the color change enabled direct visualization of the results, all in the same growth step.

MPN results generated from the three broths showed no significant differences (p = 0.45). The results consistently demonstrated high comparability of LPBR and TSBR/MACR MPN methods in fresh produce samples.

E. coli TVS353 MPN estimates in MPN/mL

	0.1% PW	Sterile coil suspension	Non-sterile soil suspension	Inoculated in spinach leaf wash water	Inoculated on spinach leaf and extracted
TSB-P	4.17 ± 0.71[a]	8.78 ± 1.52[a]	9.03 ± 3.22[a]	25.20 ± 5.28[a]	34.74 ± 11.58[a]
TSBR-P	14.42 ± 5.97[a]	12.92 ± 6.11[a]	4.13 ± 1.01[a]	56.95 ± 16.36[a]	41.99 ± 14.00[a]
LPBR-B	5.33 ± 0.96[a]	10.08 ± 2.70[a]	5.3 ± 1.20[a]	34.83 ± 12.31[a]	34.43 ± 14.48[a]

Note: TSB-P: samples enriched in TSB and then confirmed by MACR plating; TSBR-P: samples enriched in TSBR and then confirmed by MACR plating; LPBR-B: samples enriched in LPBR and directly obtained results based on broth color change. Values are expressed as mean values ± standard error of the mean. Means with different letters within the same column are significantly different ($p < 0.05$).

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MORE INFORMATION

Gao, Z., Jha, A., Hudson, C.L., Hopper, A.L., Micallef, S.A., Tikekar, R.V., 2024. Development and evaluation of a modified most probable number (MPN) method for enumerating rifampicin-resistant *Escherichia coli* in agricultural, food, and environmental samples. *Journal of Food Safety*, 44(3), e13127. https://doi.org/10.1111/jfs.13127