

# NEW FOOD



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## Adapt to survive

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# Unveiling the superiority of N-Light™: best-in-class rapid test for *L. monocytogenes* in real-world conditions

NEMIS Technologies AG took a bold and transparent approach to assess the true capabilities of the 24 hour time-to-result N-Light™ *Listeria monocytogenes* test by conducting an extensive field study at a ready-to-eat sushi production site. This approach provided a more comprehensive assessment of the test's reliability and ability to deliver trustworthy results directly in the field.

## Study design

Throughout a two-day study, 90 samples were meticulously gathered using N-Light™ Neutralizer for sample collection. Swabs containing the collected bacteria underwent analysis within two hours from sample collection, ensuring swift evaluation.

The study incorporated extensive samples, encompassing indoor and outdoor areas within the sushi producer's facility. This diverse approach aimed to capture the full spectrum of the environment and evaluate the test's performance across various areas within the facility.

As natural prevalence of *Listeria monocytogenes* is very low, a spiking step with chilled-stressed *Listeria* was included in the study. For this purpose, *Listeria monocytogenes* ATCC 19111 was grown in non-selective agar and then chill stressed for 72 hours before incubation.

Prior to incubation, each sample was resuspended in 1ml of buffer and spiked

with 200 cfu/ml of chill-stressed *Listeria monocytogenes*, effectively rendering all samples positive for the *L. monocytogenes* bacterium.

In a meticulous comparison, each sample underwent testing through two distinct methods: the N-Light™ *L. monocytogenes* test and the ISO 11290-1 method. By using this dual-testing approach, the study could thoroughly assess the 24h rapid test in relation to the industry-standard ISO method (96 hours) commonly used for *L. monocytogenes* detection.

Lastly, to confirm the results from the N-Light™ *L. monocytogenes* test, a final step involved directly inoculating the tube's contents onto the Agar *Listeria* following Ottaviani and Agosti's (ALOA) method, with an incubation period of 48 hours at 37°C.

## Results

During the study, samples were collected from designated locations within the recommended use of the test and areas outside its intended scope. Various swabs were taken from critical control points specified in the producer's sampling plan. The test demonstrated exceptional performance when applied within its recommended use, boasting a remarkable 100 percent accuracy that equalled the ISO reference method's performance.

Even when used outside its intended scope, the test still exhibited commendable performance, achieving an 82 percent accuracy

rate. The observed decrease in performance was attributed to two primary factors:

- Overloading the sample with food matrix residues gathered from the production line or equipment
- Old dirt collected from inaccessible places which can blacken the selective broth and influence the luminescence readout.

Overall, the test displayed an impressive 93 percent accuracy rate, which can be improved in practical application by avoiding sample overload with food residues or accumulated dirt.

An important discovery from the study was the lack of correlation between the test's performance and the specific hygiene zone within the sushi producer's facility where it was conducted. This result indicates that the test maintained consistent accuracy regardless of its precise location within the facility.

Finally, direct confirmation from the tube on the ALOA plate proved highly effective, achieving a 100 percent accuracy rate.

These results confirm that simple ALOA plating provides a reliable and rapid confirmation solution without an entire lengthy and costly ISO cultural method.

## Conclusion

In summary, the field study conducted by NEMIS at the RTE factory to evaluate the N-Light™ *Listeria monocytogenes* test showcased exceptional performance within its intended use, achieving an impressive 100 percent accuracy that matches the industry-standard ISO 11290-1 method. Remarkably, even when utilised outside its designated purpose, the test still delivered a commendable performance, achieving an 82 percent accuracy rate. Such adaptability and reliability is rarely found in any scientific endeavour, making it a standout innovation in the field. □

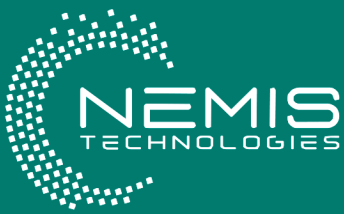
Sample type	Recommended use	N-Light™	ISO 11290-1	N-Light™ vs ISO
Door part	Yes	3/3	3/3	Same performance
Food processing equipment	Yes	27/27	27/27	Same performance
Part of production line (before, during and after production)	Yes	12/12	12/12	Same performance
Part of washing line	Yes	2/2	2/2	Same performance
Piping	Yes	5/5	5/5	Same performance
Ventilation	Yes	6/6	6/6	Same performance
Drain	No	10/10	10/10	Same performance
Cleaning equipment	No	4/4	4/4	Same performance
Food matrix from production line/equipment	No	11/14	14/14	Worse than ISO
Old dirt from inaccessible place	No	2/5	5/5	Worse than ISO

	N-Light™		ISO 11290-1	
	Recommended use	Outside of recommended use	Recommended use	Outside of recommended use
Zone 1	29/19	12/16	29/29	16/16
Zone 2	17/17	4/5	17/17	5/5
Zone 3	6/6	11/12	6/6	12/12
Zone 4	3/3	n/a	3/3	n/a
<b>Accuracy</b>	<b>100.0</b>	<b>81.8</b>	<b>100.0</b>	<b>100.0</b>



For further information, visit:

[www.nemistech.com](http://www.nemistech.com)



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**Reto Benz, Quality manager, Bianchi**

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