

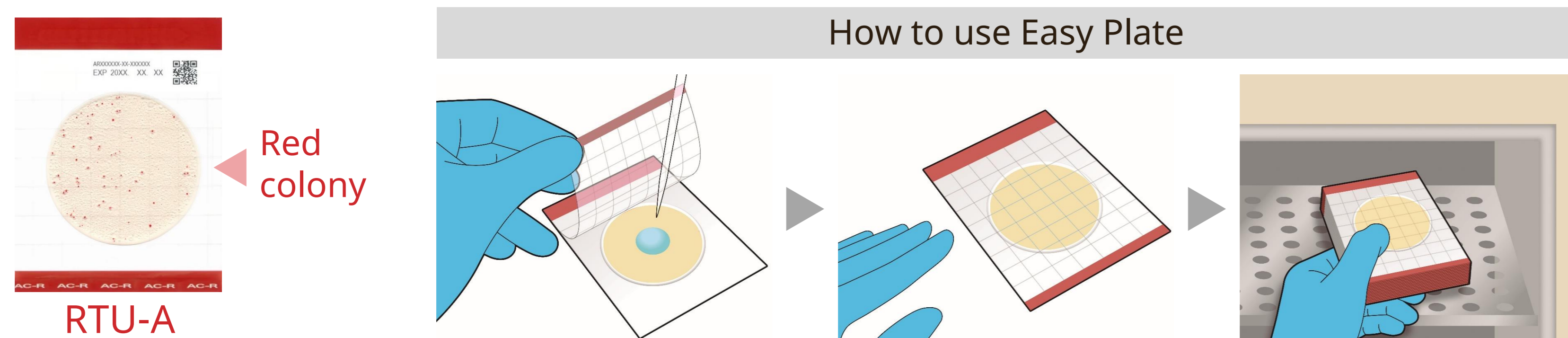
# Comparative Performance of Easy Plate AC-R for Rapid Aerobic Bacteria Count in Multiple Food Types

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## Introduction

- **Easy Plate** series (AC, CC, EC, EB, SA and YM-R) are Ready-to-Use (RTU) media developed and manufactured by Kikkoman Biochemifa Company. Compared to conventional plate media, Easy Plate offers several advantages, including **reduced testing time**, **ease of operation**, **space efficiency**, and **lower plastic usage**.
- **Easy Plate AC-R (RTU-A)** can detect aerobic bacteria, a crucial indicator in food microbiological testing, within **24 hours**, unlike traditional agar media such as **Plate Count Agar (PCA)**, which requires **48 hours**.
- This study evaluates and compares the enumeration performance of RTU-A with PCA and three other RTU media (RTU-X, RTU-Y, and RTU-Z) using a variety of commercially available food samples.

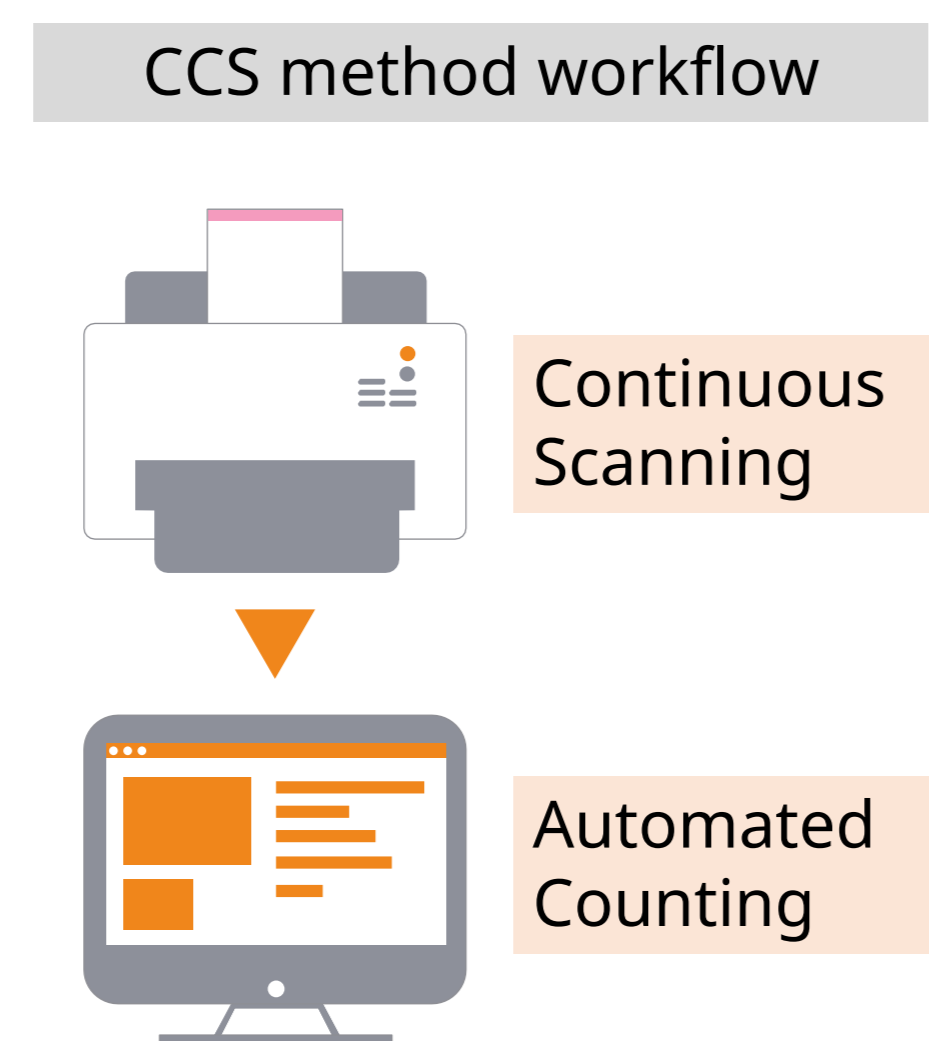


## Methods

The correlation evaluation included 64 food matrices, such as meats, seafoods, vegetables, fruits, dairy products, and prepared foods like RTE foods and dried foods. Each medium was inoculated with 1 mL of food dilution and incubated at 35±1 °C. Colony counts were performed visually at 24±1 hours for RTU media and at 48±2 hours for PCA. Counts for RTU-A were performed not only visually but also using the Colony Counting System (CCS). Furthermore, colony formation on RTU-A and PCA was compared using food samples or culture solutions containing *Bacillus* species.

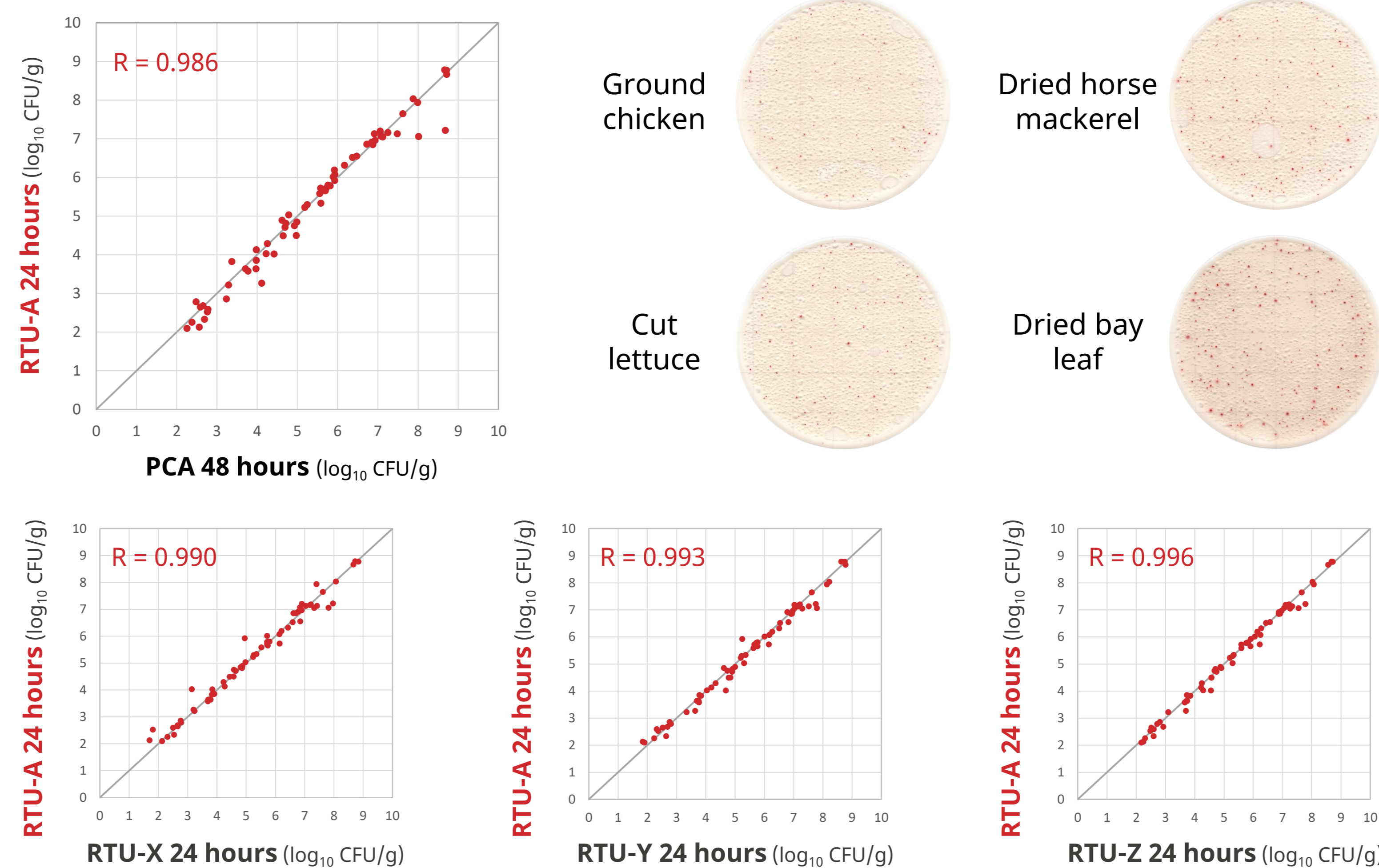
■ Categories and types tested in the correlation evaluation

Category of matrices	Kikkoman	Tokyo Kenbikyo-in	Sum
Milk and dairy products	2	3	5
Meat and poultry (Raw, RTE, RTRH, and RTC)	5	14	19
Fishery products (Raw, RTE, RTRH, and RTC)	6	7	13
Produce and fruits (fresh and processed)	1	10	11
Multi-component foods or meal components	2	7	9
Dried cereals, fruits, nuts, seeds and vegetables	2	5	7
	<b>18</b>	<b>46</b>	<b>64</b>



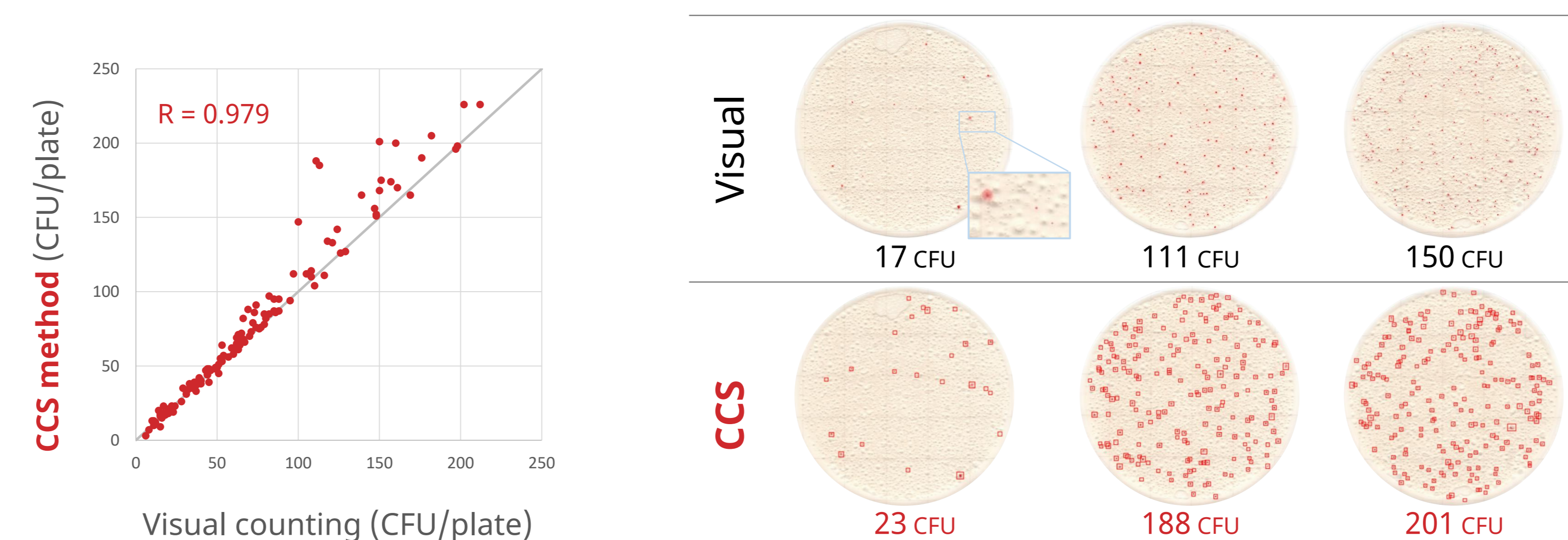
## Result 1. Correlation Evaluation in Foods

RTU-A formed distinct red colonies within a 24-hour incubation period, demonstrating a high correlation with PCA. Furthermore, RTU-A showed a strong correlation with other 24-hour RTU media.



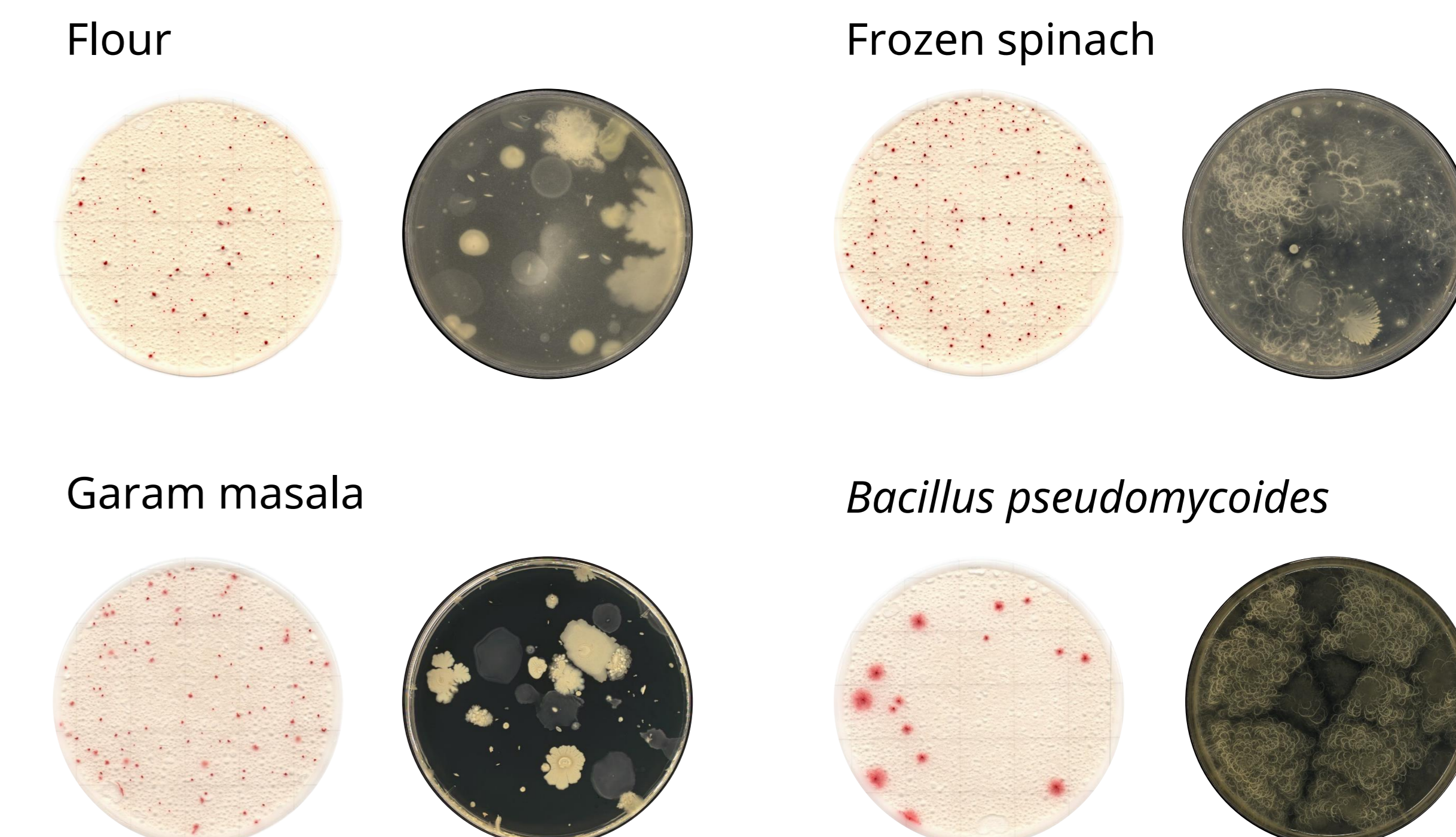
## Result 2. Automatic Counting with the CCS method

CCS tended to detect higher numbers of colonies compared to visual counting, confirming its ability to accurately count small and pale colonies.



## Result 3. Visibility of *Bacillus* Colonies

In samples containing *Bacillus* species, RTU-A formed countable colonies, whereas PCA resulted in diffuse colonies that were not countable (NC).



## Conclusion

- RTU-A demonstrated equivalent detection performance to PCA with 48-hour incubation, achieving results within 24 hours.
- CCS counts showed a high correlation with visual counts and were superior in detecting small and pale colonies.
- RTU-A also provided superior visibility for colonies in food samples containing *Bacillus* species.
- Compared to traditional methods, the testing period is shortened by one day, reducing workload and standardizing processes.

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