

Suitability of fluorescence-based microbial detection technology for food and beverage applications

Helping you work smarter

Fluorescence detection technology: the principle

Fluorescence-based technology provides a convenient and a sensitive basis for the **quantitative** and **rapid** detection of contaminants in filterable samples. The principle behind this is the universal enzymatic fluorescent staining of viable and culturable microorganisms. The fluorescent staining procedure is **non-destructive**, allowing the identification of the contaminant following a positive result.

The fluorescence-based technology as used by the EZ-Fluo™ system is not only a **fast** but also a **reliable** alternative for the detection of contaminants. Throughout manufacturing processes, the system enables faster responses and corrective action to be taken earlier if needed. It improves process control and product yield and it permits the final product to be released earlier to the market.



Sample types suitable with the technology

Any filterable sample such as:

- Raw materials (media, buffers and water)
- Final product
- Environmental samples

Examples of microorganisms detectable in various matrices

The following tables list the microorganisms that have proved detectable using the EZ-Fluo™ rapid detection system when present in certain matrices that are typical of production processes in the food & beverage and other industries. These findings are based on customer samples which have been successfully tested in our application lab as part of customer feasibility and validation studies. They show that the fluorescence-

based EZ-Fluo™ rapid detection system is, in principle, compatible with these kinds of matrices, with some of the tested samples requiring pre-treatment for detection to succeed. However, the findings must be taken to be indicative. Customers are advised to perform their own experiments with the specific matrices relevant to them in order to ensure that detection is possible for their own samples, or to have this performed by us.

Food and beverage products successfully tested

Sample source	Matrix tested	Strain recovered	Media
Beer industry	Beer	<i>Lactics</i>	Raka ray
		<i>Lactobacillus</i>	Raka ray
		Natural contamination	Wallerstein
		<i>Pediococcus</i>	Raka ray
		Total count	Wallerstein
	Soft drink beer	<i>Dekkera bruxenlensis</i>	Wallerstein
Beverages industry	Flavored water	<i>Aspergillus brasiliensis</i>	SDA
		<i>Candida intermedia</i>	SDA
	Sterile lager	<i>Lactobacillus brevis</i>	Raka ray
		<i>Lactobacillus lindneri</i>	Raka ray
		<i>Pediococcus damnosus</i>	Raka ray
	Water from storage tank	Natural contamination	Yeast extract agar
Food and beverage industry	Osmosed water	Natural contamination	Yeast extract agar
		<i>Chryseobacterium sp.</i>	R2A
		<i>Nocardia sp., Rhodococcus sp.</i>	R2A
		<i>Paenibacillus sp.</i>	R2A
		<i>Sphingobium sp.</i>	R2A
Food industry	Antifoam	<i>Kurthia gibsonii</i>	PCA
	Molasse	<i>Bacillus pumilus</i>	PCA
	Syrup	<i>Kurthia gibsonii</i>	PCA
Soft drinks industry	Ringer solution	<i>Bacillus subtilis</i>	MEA
		<i>Candida parapsilosis</i>	MEA
		<i>Penicillium</i>	MEA
	Apple juice	<i>Saccharomyces cerevisiae</i>	Orange Serum
	Aromatized water	<i>Lactobacillus acidophilus</i>	MRS
	Energetic drink	Mix of <i>Aspergillus brasiliensis</i> and <i>Candida parapsilosis</i>	SDA
	Flavored iced tea	<i>Aspergillus brasiliensis</i>	SDA
		<i>Bacillus subtilis</i>	SDA
		<i>Candida parapsilosis</i>	SDA
		Natural contamination	OGYE
		<i>Neosartorya fischeri</i>	SDA
		<i>Penicillium verrucosum</i>	SDA
		<i>Saccharomyces cerevisiae</i>	SDA
	Mango Juice	<i>Candida parapsilosis</i>	SDA
	Ready-to-drink black tea	<i>Saccharomyces cerevisiae</i>	Orange Serum
	Ready to drink green tea	<i>Zygosaccharomyces bailii</i>	SDA
	Strawberry juice	<i>Candida parapsilosis</i>	Orange Serum

Food and beverage products successfully tested

Sample source	Matrix tested	Strain recovered	Media
Wine industry	Red wine	<i>Dekkera bruxenlensis</i>	Brettanomyces selective broth
	Sweet wine	<i>Zygosaccharomyces bailii</i>	ZBA
	Wine	<i>Saccharomyces cerevisiae</i>	Y&M agar
		Natural contamination	Y&M agar
Mineral water	Mineral water	Coliforms	Tergitol TTC
		<i>Enterococcus faecium</i>	Slanetz-Bartley
		<i>Pseudomonas aeruginosa</i> blue/green	CET
		<i>Pseudomonas aeruginosa</i> fluorescent	CET

Other products successfully tested

Sample source	Matrix tested	Strain recovered	Media
Chemicals	Ink	<i>Pseudomonas aeruginosa</i>	TSA
	Soft drink beer	<i>Dekkera bruxenlensis</i>	Wallerstein
IT	Ink	<i>Candida albicans</i> ; <i>Ralstonia pickettii</i>	TSA
		Natural contamination	R2A and PCA
Medical imaging products	Contrast agent	<i>Pseudomonas aeruginosa</i>	TSA
Oil industry	Diesel	<i>Pseudomonas aeruginosa</i>	TSA
Over the counter medicines	Bisacodyl (laxative)	<i>B.subtilis</i> ; <i>P.aeruginosa</i> ; <i>B.cepacia</i> ; <i>C.albicans</i> ; <i>A.brasiliensis</i>	TSA and SDA
	Gynecologic cleaning solution	<i>B.subtilis</i> ; <i>P.aeruginosa</i> ; <i>B.cepacia</i> ; <i>C.albicans</i> ; <i>A.brasiliensis</i>	TSA and SDA
	Saccharose syrup	<i>Rhodotorula mucilaginosa</i>	TSA and Sabouraud Chloramphenicol
PCP	Spring water in aerosols	<i>Pseudomonas aeruginosa</i> ; <i>Staphylococcus aureus</i> and <i>Brevundimonas vesicularis</i>	TSA

Summary

The above findings show that the EZ-Fluo™ rapid detection system is basically suitable to detect a wide range of microorganisms in a considerable variety of matrices used or produced in the food & beverage and other industries.

If you have any questions or would like your own specific samples to be tested by us on these systems, please contact us.

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