A Rapid On-site Water Pathogen Detection Kit

Technology Overview

The technology is a portable microbial rapid sampling and testing field kit for water quality monitoring, targeting *Pseudomonas aeruginosa* and *Legionella* and *Enterococcus*, with a sensitivity of 1 colony forming unit per 100 milliliters (1CFU/100mL), and the total analysis time is less than 1 hour. The kit is able to differentiate live bacteria from dead bacteria. Briefly, a 100mL water sample is filtered and concentrated via custom filtration system, resulting in a small volume of sample concentrate. Deoxyribonucleic acid (DNA) will be extracted from the concentrate, before being subjected to isothermal amplification, where a single copy of DNA is being amplified into millions of copies. Subsequently, proprietary reagents can be added to facilitate a 'pregnancy test-kit' type of read-out (immunoassay format).

Technology Features & Specifications

- On-site testing: The kit comprises a portable case and a consumable kit where water testing can be easily performed on-site.
- Rapid: The kit takes less than 2 hours to provide a qualitative result (YES/NO) and can also differentiate between viable bacteria from free-floating DNA.
- Sensitive: The kit has a detection limits similar to W.H.O Drinking water standards – 1 CFU/100mL.
- Selective: The kit selectively detects *Pseudomonas aeruginosa* and *Legionella* or *Enterococcus*, from a panel of other known bacteria.
- Ease of storage: Test reagents required are specially formulated and prepared such that they can be stably stored for long period of time at ambient temperature, without the need for refrigeration or any special storage condition.
- Ease of use: The kit is designed for users with minimum technical knowledge.

Market Trends & Opportunities (description of market trends and needs etc)

- Governments, cities and municipals: The kit can be used to detect bacterial infection and for ensuring our water and food is safe.
- Spas: Regulators can use the kit to conduct periodic checks on spas to ensure acceptable water quality.
- Retail malls and public water parks: Retail mall owners can use the kit to ensure that their water is free of harmful bacteria through regular and frequent testing.
- Residential and hotel swimming pools: the kit can also be used for water quality assurance in pools
- Fish farms: Aquaculture and fish farms is another potential market sector where operators can use the kit to monitor water microbial quality and allow the operators to keep the water in optimal conditions.

Benefits

- On-site testing for layman users;
- Rapid (<2 hours)
- Preliminary screening (YES/NO);
- Sensitive;
- Selective

Potential Application

- Governments, cities and municipals.
- Spas and swimming pools
- Retail malls and public water parks
- Aquaculture and fish farms

Commercialisation Opportunities

✓ Ready for commercialization
✓ Available for licensing
✓ Accepting business plans from interested parties

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