Rapid detection of microorganisms in aseptic products using an ATP bioluminescent system.

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Using a mutant firefly luciferase (heat-resistant and surfactant tolerant) and an ATP degradation system, we have developed a rapid method to monitor aseptic conditions in food and drink products. We used three bacteria strains of *Pseudomonas fluorescens*, *Bacillus mycoides* and *Klebsiella pneumoniae*, which were isolated from non-sterility products. Each of these bacteria were cultured in dairy creams or cocoa drink for 24 h at 37 °C and then an each aliquot of each cultured sample was assayed using our new ATP bioluminescent kit and the traditional plating method. Using our new ATP kit, the detection limit of *P. fluorescens*, *B. mycoides* and *K. pneumoniae* were $2 \times 10^4$, $1 \times 10^3$, and $5 \times 10^3$ CFU/ml, respectively.

This ATP system was widely used at food plants (cream, milk and yogurt) and beverage plants (canned coffee) in Japan.