



Monitoring Aflatoxin in Milk

Technology Description

The developed technology is working on principle of spore germination inhibition in presence of Aflatoxin M1.

Marker enzymes are released during germination, changes the color of chromogenic substrate to sky blue color

In presence of Aflatoxin M1 the spore germination process is inhibited and no change in color of substrate indicates the presence of Aflatoxin M1 when pre-treated milk along with chromogen is incubated at $37 \pm 2^\circ\text{C}$ for 45 ± 5 min.

Name Of institute:
NDRI, Karnal
Stage of development:
Ready for Commercialization
Patent status: Filed

Scientific Experts:
Dr. Naresh Kumar

Background

The conventional methodology like HPLC, Microbial receptor based charm / or ELISA assay which usually requires huge infrastructure cost varying from 3- 20 lakhs are in used at R &D institution or in referral test house .

New technology on Aflatoxin M1 will be a cost effective substitute and

Benefits / Utility

Technology is cost effective i.e. Rs 20 / test. Scope to apply at farm level to detect Aflatoxin M1 in milk at codex 0.5 ppb limit

Country Context

The prevalence of aflatoxin M1 is prevalent in milk and is compulsory regulatory requirement as codex limit (0.5 ppb limit) in developed as well as in our regulatory FSSAI standard.

Scalability

The technology is suitable for small and medium enterprises that can transform the process into a kit prototype for industrial application as well as can also be adopted by the dairy / food industry for regulatory compliance without added

Business and Commercial Potential

The technology is suitable for small and medium enterprises that can transform the process into a kit prototype for industrial application as well as can also be adopted by the dairy / food industry for regulatory compliance without added cost

Potential investors to this technical innovation

Stakeholders with business in diagnostic kits and dehydrated media preparation can adopt this technology without added cost in their existing facility



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Financials

Total Capital Investment(excluding Land and licensing fees) : Rs 15-20 lakhs Break of capital investment in routine microbiological facility required for aseptic work which includes biosafety cabinet, centrifuge, autoclave, pH meter, Electronic balance, Incubator, Auto pipettes, vacuum drying system etc Variable cost (per /unit): Rs 15/- Break of variable cost consumables, dehydrated media, selective agent, enzyme substrates etc. Expected sale/unit: Appr. 2000 test kit per month in the beginning and may go up significantly if assay became a

Target Market / Customer

1. Dairy industry
2. Milk processing industry
3. Pharmaceutical units
4. FSSAI approved laboratory
5. NABL accredited laboratory
6. R & D independent test houses

Limiting factors for large scale commercialization

Modus operandi to get clearance for product trials from stake holders before licensing / MOU agreement

Social impact of the technology

Aflatoxins are well known hepato-carcinogen, mutagen and immunosuppressive agents

The International Agency for Research on Cancer classified aflatoxins as Group-1 of human carcinogens and it's actionable" level 15-20 ppb in animal feed and 0.5 ppb (AFM1) in dairy products has been established.

(AFM1) is hydroxylated metabolite of AFB1 and exhibits a high level of genotoxic activity with serious health risk in dairy food chain because of its evidence in accumulation and linkage to DNA

