

## Antibiotic residues in milk put Indian iGen at risk

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### Need to create a framework for building an antibiotic resistance monitoring system (ARMS)



India, the second largest producer and consumer of dairy products in 2018, needs a regulatory body to create a framework for building an antibiotic resistance monitoring system (ARMS) and develop training centers for teaching Good Husbandry Practices to dairy farmers and ranchers, according to a study done by the Coimbatore-based research firm, Firstmr Business Analytics (F1rst).

F1rst is a business research and consulting firm specializing in food and beverage ingredients, based in India with a global footprint. As part of its academia outreach services, a survey was conducted in five different cities, including Ahmedabad, Bengaluru, Delhi, Hyderabad, and Mumbai to test the prevalence of antibiotic residues in milk. The prevalence of antibiotics residues was found to be higher in Delhi (100%), Ahmedabad (60%), Hyderabad (20%), followed by Bengaluru (10%) and Mumbai (10%).

The South-Asian nation, which produced over 175 million tons of dairy products in 2018, is at risk of passing on antibiotic residues to its future generations through dairy products and milk.

### Improper drug usage

Out of 10 samples collected in each city for five days continuously, Ahmedabad and Delhi showed higher levels of antibiotic residue prevalence. Prevalence is calculated based on the number of milk samples showing positive above the tolerance limit ranging from 10µg/L of different antibiotics for minimum one day during the survey period of five days.

Frequency of milk sample laced with antibiotic residues was at a higher level in Ahmedabad, which means that antibiotic residues were detected all the five days.

Babies can't digest cow milk as easily as breast milk and when it contains antibiotics it may lead to antibiotic resistance, said

Dr. S. Balamurugan, Vice president of Indian Academy of Pediatrics, Tamil Nadu. Moreover, if the milk is “containing antibiotics which may lead to antibiotic resistance to babies (it may) also complicate and prove difficult to give appropriate antibiotics to babies,” he said in an interview. “So, starting cow’s milk after a year is advised mostly.”

Antibiotics residues arise from drugs that are administered to the animals and unintentionally get into the milk they produce. If a batch of liquid milk contains antibiotics at a level above the tolerance limit of 10µg/L of milk, then it has to be rejected. Some of the dairy processors or small-scale milk producers ignore these tests. This is either due to the lack of awareness of the implications or considering this quality check as unnecessary for liquid or pouch milk-processing, according to the F1rst study.

### **Strict procedures**

Large dairy players, with fermented dairy in their product portfolio, have strict procedures on quality control, including a check for antibiotic residues. This is to avoid milk that will interfere with the fermentation by lactic acid bacteria and other microorganisms.

### **Temperature treatment**

Studies on heat or thermal stability of veterinary antibiotics commonly detected in food have shown that some antibiotics (sulphonamides) are heat stable and can withstand over 100 degree Celsius.

This means that high-temperature treatment cannot degrade antibiotics and even if it is degraded either partial or complete, effects of these degradation by-products on human health or food safety are yet to be studied.

### **Regulatory standards**

Animal husbandry should be closely monitored with the regulatory standards, and proper diagnostic kits should be made available to prevent the milk with remnant antibiotics entering the dairy chain at the farm-level.

There should be sufficient skilled manpower trained on drug usage and disease control, made available to each animal husbandry locations, the F1rst study stated.

The National Action Plan on antimicrobial resistance (AMR), a broader term for antibiotic resistance, (NAP-AMR) proposes to restrict non-therapeutic antimicrobials use. The Central Drug Standards Control Organisation (CDSCO) endorsed that people should only use antibiotics under prescribed conditions and not as OTC (over-the-counter) drugs.

### **Awareness**

An initial survey conducted by F1rst had shown a higher prevalence of  $\beta$ -lactams (beta-lactam) and tetracycline class of antibiotics in the milk samples from the retail markets in five selected cities in India. This highlights the need to build awareness on proper antibiotics usage in livestock, mainly cows, to treat mastitis.

### **Consumer concerns**

There is a need for vigilant control and monitoring of antibiotics and self-compliance, Good Husbandry Practices and Hazard Analysis and Critical Control Points, according to the F1rst study. Creating awareness among the stakeholders is vital to implement new regulations and standards towards the importance of handling antibiotics.

Dairy farmers and para-vets should be trained for proper use of antibiotics and sensitised to prevent OTC drug purchase and administration of antibiotics to cattle.