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Unlocking Alimentary Transmission: How Milk Components Modulate Tick-Borne Encephalitis Virus Stability

Monday, October 13, 2025 7:12 PM (1 minute)

Tick-borne encephalitis virus (TBEV) is not only transmitted by ticks but also via contaminated dairy products—a route that remains underappreciated despite its public health relevance. We explored how milk shapes viral survival in the digestive tract using simulated gastrointestinal conditions. Although milk can preserve TBEV infectivity at low temperatures, it acts very differently in the gastric environment, where it reduces viral stability and viability. This effect, driven by whey, casein, and lipids, suggests that rapid gastric transit is critical for successful infection. In the intestine, milk shields TBEV against bile salt–mediated inactivation, with casein emerging as the key protective factor. Thus, milk plays a dual role in TBEV alimentary transmission, limiting survival in the stomach but supporting persistence in the intestine. Our findings shed new light on how dietary components modulate viral stability, providing critical insights into the overlooked risk of foodborne tick-borne encephalitis.

Keywords

Tick-borne encephalitis (TBEV), foodborne infection, alimentary transmission

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Professional Status of the Speaker

PhD Student

Junior Scientist Status

Yes, I am a Junior Scientist.

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