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Review

Listeria monocytogenes: an overview

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Abstract: *Listeria monocytogenes* is a potentially lethal foodborne pathogen responsible for listeriosis, a serious and often invasive multisystem disease. This pathogen can infect a wide range of host tissues, leading to various clinical outcomes, from febrile gastroenteritis to severe complications such as sepsis, meningitis, and spontaneous abortions. Recognized as a human pathogen for over 80 years, *L. monocytogenes* presents an increasing public health challenge, especially in light of rising use of immunosuppressive therapies for cancer and other conditions, which has intensified infection risk among vulnerable individuals and elevated listeriosis prevalence in communities. Additionally, shifts in consumer behavior, with reduced time spent on food preparation and greater reliance on ready-to-eat and convenience foods, have heightened exposure risks. Advances in food production and preservation technologies have led to extended shelf-life products, often associated with increased *Listeria* risk. Addressing *L. monocytogenes* requires collective efforts from consumers, public health authorities, and the food industry. For effective disease monitoring, health authorities must implement a robust screening program to detect listeriosis cases, alongside regular characterization of isolates from human, food, and environmental sources. Integrating these data into shared databases is essential for tracking the pathogen and enforcing preventive measures.

Keywords: *Listeria monocytogenes*; foodborne pathogen; listeriosis; ready-to-eat foods; psychrotrophic bacteria

1. Introduction

Listeria monocytogenes is a Gram-positive, rod-shaped bacterium exhibiting psychrotrophic properties, facultative anaerobic metabolism, motility, and non-sporulating characteristics (Lourenco *et al.*, 2022; Osek *et al.*, 2022). Fresh cultures of this microorganism typically form short cellular chains. Uniquely, *L. monocytogenes* is hemolytic and ferments rhamnose without utilizing xylose (Shamloo *et al.*, 2019; Szymczak, 2023). As a psychrotroph, it grows across a broad temperature range of 1°C to 44°C, with an optimal growth temperature between 35°C and 37°C, and can proliferate rapidly at lower temperatures, particularly between 7°C and 10°C (André *et al.*, 2017; Boas *et al.*, 2025). Additionally, it ferments glucose without gas production, enabling its growth in diverse food products and environmental conditions (Sharma *et al.*, 2020; Abbaspour, 2024). *L. monocytogenes* exhibits remarkable resistance to adverse environmental conditions, including freezing, desiccation, high salinity, and pH levels above 5.0. However, it remains vulnerable to pasteurization; a temperature of 72°C for 15 seconds or 63°C for 30 minutes is generally sufficient to inactivate the organism. For pathogens located within leukocytes, inactivation requires temperatures between 76.4°C and 77.8°C for 15 seconds (Bucur *et al.*, 2018; Osek *et al.*, 2022). *L. monocytogenes* has a unique ability to reproduce

intracellularly in various mammalian cells, including enterocytes, macrophages, hepatocytes, neurons, and fibroblasts, presenting a significant risk to high-risk groups such as pregnant women, the elderly, and immunocompromised individuals. Vulnerable populations include those with immunodeficiencies, such as patients with AIDS, cancer, liver or kidney disease, substance users, alcoholics, and patients on corticosteroid therapy (Shahid *et al.*, 2021). In severe cases, *L. monocytogenes* can cause encephalitis and, in some instances, fatal outcomes. Pregnant women are at a 20-fold increased risk of developing listeriosis compared to the general population, while it is estimated that 1-10% of people harbor *L. monocytogenes* in their feces (Hoelzer *et al.*, 2012; Osek and Wieczorek, 2022). The *Listeria* genus is characterized by non-spore-forming, non-encapsulated bacteria that exhibit motility through peritrichous flagella, with maximum motility observed between 20°C and 35°C, while movement becomes static at 37°C. Optimal growth requires B-group vitamins (e.g., biotin, riboflavin, thiamine, and alpha-lipoic acid) and amino acids such as cystine, glutamine, isoleucine, leucine, and valine (Takahashi *et al.*, 2010; Doghri *et al.*, 2021). Significant species within the genus include *L. monocytogenes*, *L. innocua*, *L. seeligeri*, *L. welshimeri*, *L. grayi*, and *L. ivanovii*, with *L. monocytogenes* being the most pathogenic to humans and animals (Orsi and Wiedmann, 2016; Orsi *et al.*, 2024).

In recent years, an increase in listeriosis cases has been observed in various European countries. Primary sources include ready-to-eat foods, post-pasteurization contaminated dairy products, inadequately pasteurized pork tongue, and certain types of soft cheese. Approximately 90% of human listeriosis cases stem from ready-to-eat foods, with uncooked Frankfurter-type meats being particularly high-risk (Haque *et al.*, 2018; Alam *et al.*, 2020; Nüesch-Inderbinen *et al.*, 2021; Uddin *et al.*, 2021; Ohiduzzaman *et al.*, 2022; Al-Mamun *et al.*, 2023). Given that *Listeria monocytogenes* causes foodborne infections and can be fatal, particularly for high-risk groups, preventing the spread of this pathogen is a critical public health concern. The increasing cases of listeriosis and food safety challenges necessitate a detailed investigation of this issue. This study aims to explore the epidemiological significance of *Listeria monocytogenes* as a foodborne pathogen and the measures to control its spread. Specifically, this study seeks to address the following questions, In which food products is *Listeria monocytogenes* most prevalent? What are the most effective control methods to prevent the spread of this pathogen? This review aims to examine the prevalence of *Listeria monocytogenes*, the diseases it causes, and the strategies for its control.

2. Habitat of *L. monocytogenes*

L. monocytogenes is highly adaptable, having been isolated from diverse environmental sources, including soil, sewage, water, and decaying vegetation. This bacterium is also present in the intestinal tracts of domesticated animals, birds, and occasionally humans, who may carry it asymptomatically (Matle *et al.*, 2020; Schoder *et al.*, 2023). Numerous fresh food products, such as leafy vegetables, tubers (e.g., potatoes and radishes), raw meats, milk, eggs, seafood, and fish, have been found to harbor *L. monocytogenes*. Remarkably, even heat-treated and ready-to-eat items, such as pasteurized milk and other dairy products, can contain this microorganism. *L. monocytogenes* has also been isolated from various surfaces and equipment within food production and storage facilities (Chakma *et al.*, 2018; Hassan *et al.*, 2018; Islam *et al.*, 2018; Kljujev *et al.*, 2018; Kabir *et al.*, 2019).

The transmission pathways of *Listeria monocytogenes* are illustrated in Figure 1. The figure describes a cycle encompassing risks originating from humans, the environment, and food. It details the interactions between livestock, the environment, and humans, demonstrating how these relationships are mediated through food products and fecal/waste materials, thereby highlighting potential infection risks (Raschle *et al.*, 2021; Ravindhiran *et al.*, 2023).

Determining the infectious dose for this bacterium is challenging due to its extended incubation period and variable disease progression. Animals, especially sheep, goats, and cattle that consume low-quality silage contaminated with *L. monocytogenes*, can serve as primary infection sources (Ahammed *et al.*, 2016). Food preparation environments, particularly those that are cool and damp, can act as reservoirs, where the bacterium's resilience and ability to multiply at low temperatures enable it to form persistent biofilms, complicating control measures (Matle *et al.*, 2020; Schoder *et al.*, 2023). *L. monocytogenes* thrives across a wide range of conditions, including temperatures from -1.5°C to 45°C, pH levels between 4.3 and 9.4, and environments with various salt and nitrite concentrations (Forauer *et al.*, 2021). Its ability to proliferate at refrigeration temperatures poses a significant risk for foods stored cold for prolonged periods without subsequent heat treatment, such as ready-to-eat items. The bacterium can survive and even grow after food processing, especially under acidic, salty, or chilled conditions (Islam *et al.*, 2016b; Coorey *et al.*, 2018; Dutta *et al.*, 2018; Hasan *et al.*, 2018). As a member of the Listeriaceae family, *L. monocytogenes* is catalase positive, oxidase negative, aerobic-facultatively anaerobic, and CAMP positive. Of the 13 known serotypes, three (4b, 1/2a, and 1/2b) are responsible for approximately 90% of clinical cases of listeriosis, with serotype 4b being the most commonly associated with

foodborne outbreaks (Jamshidi and Zeinali, 2019). Given its widespread environmental presence, *L. monocytogenes* is often described as an "environmental contaminant." It is an opportunistic pathogen with a high mortality rate of 25-30%, capable of causing multisystem diseases and thriving in the presence of lactic acid bacteria.

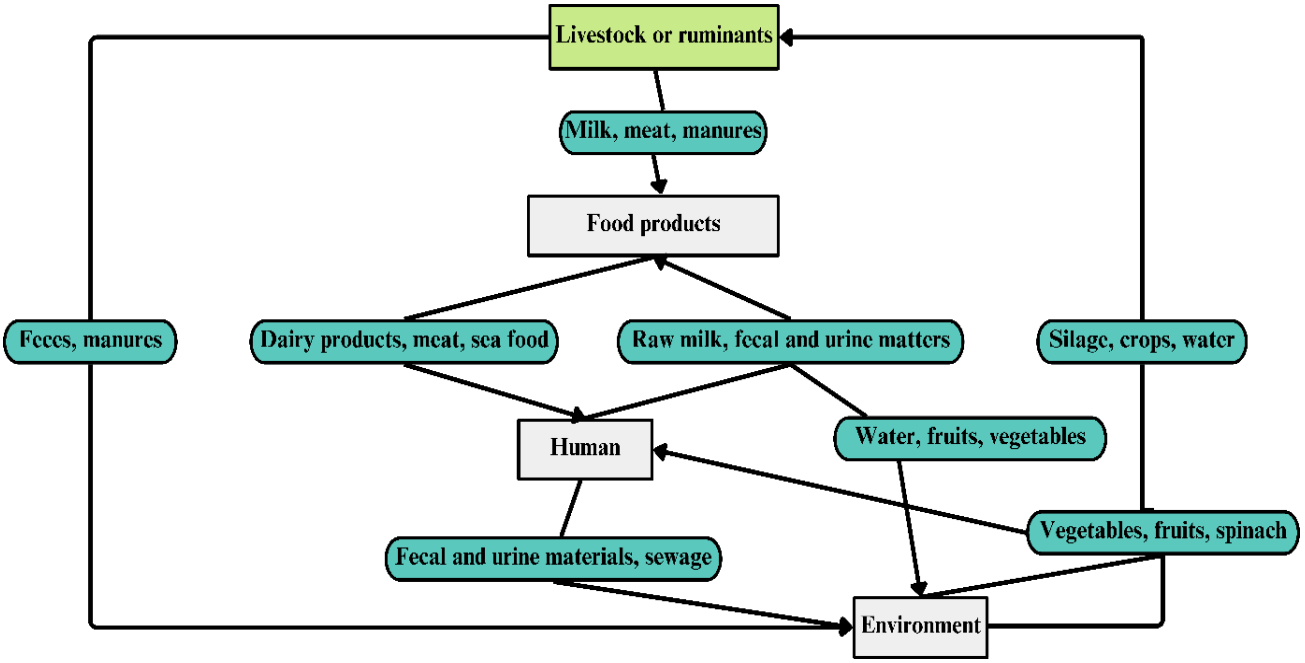

Figure 1. Transmission and dissemination network map of *Listeria monocytogenes*.

The primary sources of *L. monocytogenes* contamination include decaying organic matter, soil, animal feces, sewage runoff, silage, and water. Within the food industry, high-risk products encompass ready-to-eat items, emulsified cooked sausages (e.g., salami and sausage), and uncooked cheeses with high moisture content (Al-Ferdous *et al.*, 2013; Lakicevic *et al.*, 2015; Gobasho and Mustefa, 2022).

3. Implications of *Listeria monocytogenes* presence in ready-to-eat foods

L. monocytogenes contamination in ready-to-eat foods presents significant public health concerns due to operational errors and post-processing cross-contamination. Improper handling and co-storage of raw and heat-treated products at points of sale often lead to contamination, particularly in ready-to-eat items (Kabir *et al.*, 2015; Seel *et al.*, 2016; Lakicevic and Nastasijevic, 2017; Monir *et al.*, 2017; Sarker *et al.*, 2020). The incidence of *L. monocytogenes* in various food categories has been documented extensively: dairy products (1-23%), meat and meat products (5-92%), poultry (12-60%), seafood (4-18%), and vegetables (1-21%) (Kabir *et al.*, 2014; Al-Salauddin *et al.*, 2016; Sharma *et al.*, 2024).

4. Virulence factors of *Listeria monocytogenes*

Virulence in *L. monocytogenes* is facilitated by specific factors, including internalin (required for cellular internalization, with mutants showing reduced invasiveness), listeriolysin O (LLO), a hemolysin critical for virulence, and actA, which is associated with intracellular motility and actin polymerization. Listeriolysin O is the primary hemolytic toxin produced during bacterial growth, allowing *L. monocytogenes* to invade and proliferate within host cells, causing cell death (Pizarro-Cerdá and Cossart, 2018; Coelho *et al.*, 2019).

5. Disease and symptoms

5.1. General symptoms

Consumption of contaminated food may result in mild or asymptomatic infection in healthy individuals, with symptoms such as flu-like signs, mild fever, abdominal cramps, and diarrhea appearing 1 to 7 days post-ingestion. While symptoms are often transient, bacteria may continue to be shed in stool. High-risk groups, including pregnant women, fetuses, infants, and immunocompromised individuals, can experience severe symptoms, starting with gastrointestinal signs (e.g., nausea, vomiting) followed by fever and headache (Sudarsan *et al.*, 2018; Rahman *et al.*, 2021). The pathogen can further disseminate to essential organs and the

central nervous system, posing significant risks to pregnant women as it crosses the placenta, leading to potential complications for the fetus (Graves, 2013).

5.2. Clinical manifestations of listeriosis

Clinical listeriosis presents in various forms, including the acute septic/abortive form, commonly occurring in the third trimester of pregnancy and associated with maternal symptoms like chills, throat pain, and altered urine color, often resulting in severe infant complications such as stillbirth or mental disabilities. The central nervous system form manifests with high fever, severe headache, neck stiffness, and neurological symptoms, with a mortality rate of approximately 30% (Neogi *et al.*, 2020; Islam *et al.*, 2023). The glandular form involves cervical lymphadenitis, while the localized form may present as skin infections, conjunctivitis, gastrointestinal issues, and flu-like symptoms. Chronic-septic listeriosis can cause endocarditis and abscesses, and other manifestations range from brain abscesses and arterial infections to joint and gastrointestinal symptoms. *L. monocytogenes*, a key causative agent, has been linked to a broad spectrum of foodborne diseases due to its ability to thrive at refrigeration temperatures, emphasizing the critical role of proper food storage and reheating practices. The growing consumption of ready-to-eat foods and technological advancements in food production have increased contamination risks, establishing *L. monocytogenes* as a significant emerging foodborne pathogen with a fatality rate of 30–40% (Leung and Davies, 2009; Sharmin *et al.*, 2013; Bagatella *et al.*, 2022).

5.3. Transmission sources

Listeriosis typically occurs sporadically but has been linked to outbreaks from foods such as cabbage salads, pasteurized milk, soft cheeses, and meat products. Insufficient heat treatment or post-processing contamination are primary factors. The disease predominantly affects vulnerable populations, with severe cases often resulting in mortality (Kabir *et al.*, 2005; Islam *et al.*, 2016a, 2024; Farber *et al.*, 2021).

6. Prevention and control of listeriosis

The pervasive nature of *L. monocytogenes* makes the production of pathogen-free food particularly challenging. Nevertheless, several countries have implemented robust *Listeria* control programs within commercial facilities, contributing to a marked decline in listeriosis cases since 1991. Upon identifying contamination, rigorous inspections are conducted, followed by the implementation of sanitation protocols, such as the Hazard Analysis Critical Control Point (HACCP) system, until products are confirmed free from *L. monocytogenes* (Islam *et al.*, 2013; Jahan *et al.*, 2013; Farber *et al.*, 2021). Additionally, consumer education is essential to reduce foodborne listeriosis cases, as informed practices can mitigate the risks associated with *L. monocytogenes* in food products.

6.1. Key consumer education recommendations

To minimize the risk of listeriosis, it is essential for consumers to adopt proper food safety practices. The table below outlines key recommendations for cooking, hygiene, food storage, and specific precautions for high-risk groups, such as pregnant women and immunocompromised individuals (Table 1). By following these guidelines, the likelihood of *Listeria monocytogenes* contamination and infection can be significantly reduced (Cokes *et al.*, 2011; Langiano *et al.*, 2012; Al Mamun *et al.*, 2017).

Table 1. Key guidelines for preventing listeriosis.

Category	Recommendations
Cooking	Cook animal-derived foods thoroughly to ensure safe internal temperatures.
Washing	Wash vegetables rigorously under running water to remove contaminants.
Cross-contamination prevention	Keep raw meat, poultry, and seafood separate from vegetables and ready-to-eat foods during preparation and storage.
Food storage	Store cooked and ready-to-eat foods separately in sealed containers.
Dairy products	Avoid consuming raw milk and raw milk products; opt for pasteurized alternatives.
Hygiene practices	Wash hands, utensils, cutting boards, and surfaces thoroughly after handling raw foods.
High-risk groups	Avoid high-risk foods like soft cheeses (e.g., feta, brie, blue cheese) unless labeled as pasteurized. Reheat refrigerated and ready-to-eat items (e.g., deli meats, leftovers) to steaming hot temperatures before consumption.

6.2. Primary guidelines for listeriosis prevention

- **Food preparation**: Ensure thorough cooking of animal-derived foods, wash raw vegetables, and prevent cross-contact between raw meats and other food items. Efficient heating methods (e.g., microwaves) should be used with caution as they may not uniformly heat food, and reheating should be limited to once. Implement business hygiene practices, including the HACCP and Good Manufacturing Practice (GMP) protocols. Effective pasteurization and heat treatments, particularly above 72°C for meat products, are essential, as well as maintaining milking hygiene (Redmond *et al.*, 2004; Haque *et al.*, 2018; Islam *et al.*, 2018, 2024; Al-Mamun *et al.*, 2023).
- **Storage and shelf life**: Ensure refrigerators operate at optimal temperatures (0-4°C) by regularly checking with a thermometer and maintaining the cold chain for perishable items. Adhere to expiration dates on food packaging.
- **Industry best practices**: Food production facilities should implement regular monitoring for *Listeria* presence and adopt novel anti-listerial technologies. Practices such as using bacteriocin-producing starter cultures, ensuring hygienic silage production, and opting for protective packaging materials are recommended (Piet *et al.*, 2016).
- **Specific recommendations for vulnerable populations**: Pregnant women and immunocompromised individuals should avoid ready-to-eat deli meats and exercise caution with high-risk food products (Einarson *et al.*, 2010).

7. Conclusions

L. monocytogenes is a significant foodborne pathogen, particularly dangerous for immunocompromised individuals, due to its ability to thrive under diverse conditions, including low temperatures. The rise in ready-to-eat foods and extended shelf-life products has increased the risk of listeriosis. Effective control requires robust screening, centralized data tracking, and public education on safe food handling. Coordinated efforts between public health authorities, food producers, and consumers are essential to reduce its incidence and manage foodborne health risks effectively.

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Data availability

Not applicable.

Conflict of interest

None to declare.

Author's contribution

This manuscript was solely prepared by the author, Mustafa Atasever, who conducted the research, wrote the manuscript, and reviewed all sections for accuracy and coherence.

References

Abbaspour N, 2024. Fermentation's pivotal role in shaping the future of plant-based foods: An integrative review of fermentation processes and their impact on sensory and health benefits. Appl. Food Res., 4: 100468.

Ahammed T, SC Borty, MS Monir, N Begum, MA Islam and SML Kabir, 2016. Isolation, identification and molecular detection of *Aeromonas hydrophila* from diseased stinging catfish shing (*Heteropneustes fossilis*). Asian-Australasian J. Biosci. Biotechnol., 1: 125-133.

Al-Ferdous T, SML Kabir, MM Amin and KMM Hossain, 2013. Identification and antimicrobial susceptibility of *Salmonella* species isolated from washing and rinsed water of broilers in pluck shops. Int. J. Anim. Vet. Adv., 5: 1-8.

Al-Mamun SA, MR Islam, F Islam, M Arif, Y Deneke, SS Islam, MH Sikder and SML Kabir, 2023. Prevalence, virulence gene profile and antibiogram of *Campylobacter jejuni* from fresh vegetables in Mymensingh, Bangladesh. Asian-Australasian J. Food Saf. Secur., 7: 62-72.

Al-Salauddin A, M Hossain, A Dutta, S Mahmud, M Islam, S Saha and SML Kabir, 2016. Isolation, identification, and antibiogram studies of *Salmonella* species and *Escherichia coli* from boiler meat in some selected areas of Bangladesh. Int. J. Basic Clin. Pharmacol., 4: 999-1003.

Alam B, MN Uddin, D Mridha, AHMT Akhter, SS Islam, AKMZ Haque and SML Kabir, 2020. Occurrence of

Campylobacter spp. in selected small scale commercial broiler farms of Bangladesh related to good farm practices. Microorganisms, 8: 1778.

André S, T Vallaeys and S Planchon, 2017. Spore-forming bacteria responsible for food spoilage. Res. Microbiol., 168: 379-387.

Bagatella S, L Tavares-Gomes and A Oevermann, 2022. *Listeria monocytogenes* at the interface between ruminants and humans: A comparative pathology and pathogenesis review. Vet. Pathol., 59: 186-210.

Boas DMV, LP Margalho, CHD Sierra, JS Graça, ACH Ramos, GP Saraiva, WJF Lemos and AS Sant'Ana, 2025. The impact of temperature on the growth of *Pseudomonas aeruginosa* in mineral waters originated from different wells: a predictive approach. Int. J. Food Microbiol., 429: 110969.

Bucur FI, L Grigore-Gurgu, P Crauwels, CU Riedel and AI Nicolau, 2018. Resistance of *Listeria monocytogenes* to stress conditions encountered in food and food processing environments. Front. Microbiol., 9: 2700.

Chakma F, AAM Sabuj, ZF Haque, A Pondit, B Talukder, SML Kabir and S Saha, 2018. Isolation and characterization of *Vibrio* sp from semi processed shrimp. J. Res. Biol., 8: 2566-2573.

Coelho C, L Brown, M Maryam, R Vij, DFQ Smith, MC Burnet, JE Kyle, HM Heyman, J Ramirez, R Prados-Rosales, G Lauvau and ES Nakayasu, 2019. *Listeria monocytogenes* virulence factors, including listeriolysin O, are secreted in biologically active extracellular vesicles. J. Biol. Chem., 294: 1202-1217.

Cokes C, AM France, V Reddy, H Hanson, L Lee, L Kornstein, F Stavinsky and S Balter, 2011. Serving high-risk foods in a high-risk setting: survey of hospital food service practices after an outbreak of listeriosis in a hospital. Infect. Control Hosp. Epidemiol., 32: 380-386.

Coorey R, DSH Ng, VS Jayamanne, EM Buys, S Munyard, CJ Mousley, PMK Njage and GA Dykes, 2018. The impact of cooling rate on the safety of food products as affected by food containers. Compr. Rev. Food Sci. Food Saf., 17: 827-840.

Doghri I, T Cherifi, C Goetz, F Malouin, M Jacques and P Fravalo, 2021. Counteracting bacterial motility: a promising strategy to narrow *Listeria monocytogenes* biofilm in food processing industry. Front. Microbiol., 12: 673484.

Dutta A, SML Kabir and MT Hossain, 2018. Occurrence of *Salmonella* and *Vibrio* species in fresh fishes collected from different markets of Mymensingh, Gazipur and Sherpur districts of Bangladesh and their characterization. Asian-Australasian J. Biosci. Biotechnol., 3: 45-51.

Einarson A, C Tam, A Erebara and G Koren, 2010. Food-borne illnesses during pregnancy. Can. Fam. Physician, 56: 869-870.

Farber JM, M Zwietering, M Wiedmann, D Schaffner, CW Hedberg, MA Harrison, E Hartnett, B Chapman, CW Donnelly, KE Goodburn and S Gummalla, 2021. Alternative approaches to the risk management of *Listeria monocytogenes* in low risk foods. Food Control, 123: 107601.

Forauer E, ST Wu and AJ Etter, 2021. *Listeria monocytogenes* in the retail deli environment: a review. Food Control, 119: 107443.

Gobasho KB and AM Mustefa, 2022. Review on listeriosis in small ruminants and public health significance in Ethiopia. Int. J. Vet. Sci. Res., 8: 86-94.

Graves NS, 2013. Acute gastroenteritis. Prim. Care Clin. Off. Pract., 40: 727-741.

Haque AZ, SML Kabir, A Siddiqua and AI Hussain, 2018. Prevalence of *Salmonella* in dressed and cooked broiler meat of different grocery shops, hotels and restaurants in Gazipur and Dhaka city of Bangladesh. Asian-Australasian J. Food Saf. Secur., 2: 40-44.

Hasan M, SML Kabir, MT Rahman and YA Sarker, 2018. Bacteriological quality assessment of buffalo meat collected from different districts of Bangladesh with particular emphasis on the molecular detection and antimicrobial resistance of the isolated *Salmonella* species. Asian-Australasian J. Food Saf. Secur., 2: 12-20.

Hassan MS, SML Kabir, YA Sarker and MT Rahman, 2018. Bacteriological assessment of tap water collected from different markets of Mymensingh, Gazipur and Sherpur districts of Bangladesh with special focus on the molecular detection and antimicrobial resistance of the isolated *Escherichia coli*. Asian-Australasian J. Food Saf. Secur., 2: 21-28.

Hoelzer K, R Pouillot and S Dennis, 2012. Animal models of listeriosis: a comparative review of the current state of the art and lessons learned. Vet. Res., 43: 18.

Islam KMI, SML Kabir, S Saha and MSR Khan, 2013. Prevalence and antimicrobial resistance patterns of *Vibrio Cholerae* from Bangladesh Agricultural University dairy farm. Int. J. Med. Sci. Biotechnol., 1: 13-25.

Islam MA, SML Kabir and MT Rahman, 2016a. Molecular detection and characterization of *Staphylococcus aureus* isolated from raw milk sold in different markets of Bangladesh. Bangladesh J. Vet. Med., 14: 277-282.

Islam MA, SML Kabir and SK Seel, 2016b. Molecular detection and characterization of *Escherichia coli* isolated from raw milk sold in different markets of Bangladesh. Bangladesh J. Vet. Med., 14: 271-275.

Islam MK, SML Kabir, AKMZ Haque, YA Sarker and MH Sikder, 2018. Molecular detection and characterization of *Escherichia coli*, *Salmonella* spp. and *Campylobacter* spp. isolated from broiler meat in Jamalpur, Tangail, Netrokona and Kishoreganj districts of Bangladesh. African J. Microbiol. Res., 12: 761-770.

Islam N, MR Islam, RA Liza, MA Nobi, SS Islam, M Arif, MFR Khan, S Samosornsuk, W Samosornsuk and SML Kabir, 2024. *Escherichia coli* in betel leaves: prevalence, virulence characterization and antibiogram. Asian-Australasian J. Biosci. Biotechnol., 9: 33-44.

Islam SS, N Hoque, AT Akhter, DM Castellan, S Samosornsuk, W Samosornsuk and SML Kabir, 2023. Burden of campylobacteriosis in Bangladesh: challenges and opportunities. Asian J. Med. Biol. Res., 9: 38-50.

Jahan F, SML Kabir and MM Amin, 2013. Identification and antimicrobial resistance profiles of Salmonellae isolated from the broiler dressing plants associated with their environments. Adv. Res. J. Microbiol., 1: 1-9.

Jamshidi A and T Zeinali, 2019. Significance and characteristics of *Listeria monocytogenes* in poultry products. Int. J. Food Sci., 2019: 7835253.

Kabir SML, M Asakura, S Shiramaru, A Pal, A Hinenoya and S Yamasaki, 2015. Molecular identification and antimicrobial resistance profiles of *Campylobacter* strains of poultry origin in India with special emphasis on fluoroquinolone resistance. Asian J. Med. Biol. Res., 1: 1-8.

Kabir SML, MM Lubna, M Islam, AKMZ Haque, SB Neogi and S Yamasaki, 2019. Isolation, molecular identification and antimicrobial resistance patterns of *Campylobacter* species of dairy origin: first report from Bangladesh. Vet. Sci. Dev., 8: 16-20.

Kabir SML, BK Paul, KMR Amin, SK Saha, MZ Hosain and AJ Sikder, 2005. Characterization and in vitro drug sensitivity pattern of *Staphylococcus aureus* isolated from milk samples of mastitis affected cows in selected area of Bangladesh. J. Anim. Vet. Adv., 4: 14-16.

Kabir SML, MH Suman, MM Amin and S Yamasaki, 2014. Isolation, identification and antimicrobial resistance patterns of *Campylobacter* species from broiler meat sold at KR Market of Bangladesh Agricultural University Campus, Mymensingh. J. Agric. Food Technol., 4: 1-7.

Kljujev I, V Raicevic, J Jovicic-Petrovic, B Vujovic, M Mirkovic and M Rothballer, 2018. *Listeria monocytogenes* – Danger for health safety vegetable production. Microb. Pathog., 120: 23-31.

Lakicevic B and I Nastasijevic, 2017. *Listeria monocytogenes* in retail establishments: contamination routes and control strategies. Food Rev. Int., 33: 247-269.

Lakicevic B, I Nastasijevic and M Raseta, 2015. Sources of *Listeria monocytogenes* contamination in retail establishments. Procedia Food Sci., 5: 160-163.

Langiano E, M Ferrara, L Lanni, V Viscardi, AM Abbatecola and ED Vito, 2012. Food safety at home: knowledge and practices of consumers. J. Public Health, 20: 47-57.

Leung AKC and HD Davies, 2009. Cervical lymphadenitis: etiology, diagnosis, and management. Curr. Infect. Dis. Rep., 11: 183-189.

Lourenco A, K Linke, M Wagner and B Stessl, 2022. The saprophytic lifestyle of *Listeria monocytogenes* and entry into the food-processing environment. Front. Microbiol., 13: 789801.

Mamun MA, SML Kabir, MM Islam, M Lubna, SS Islam, AHMT Akhter and MM Hossain, 2017. Molecular identification ancd characterization of *Salmonella* species isolated from poultry value chains of Gazipur and Tangail districts of Bangladesh. African J. Microbiol. Res., 11: 474-481.

Matle I, KR Mbatha and E Madoroba, 2020. A review of *Listeria monocytogenes* from meat and meat products: epidemiology, virulence factors, antimicrobial resistance and diagnosis. Onderstepoort J. Vet. Res., 87: 1869.

Monir MS, N Bagum, SML Kabir, SC Borty and MAU Doulah, 2017. Isolation, molecular identification and characterization of *Aeromonas hydrophila* from infected air-breathing catfish Magur (*Clarias batrachus*) cultured in Mymensingh, Bangladesh. Asian-Australasian J. Food Saf. Secur., 1: 17-24.

Neogi SB, MM Islam, SKS Islam, AHMT Akhter, MMH Sikder, S Yamasaki and SML Kabir, 2020. Risk of multi-drug resistant *Campylobacter* spp. and residual antimicrobials at poultry farms and live bird markets in Bangladesh. BMC Infect. Dis., 20: 278.

Nüesch-Inderbinen M, GV Bloemberg, A Müller, MJA Stevens, N Cernela, B Kollöffel and R Stephan, 2021. Listeriosis caused by persistence of *Listeria monocytogenes* serotype 4b sequence type 6 in cheese production environment. Emerg. Infect. Dis., 27: 284-288.

Ohiduzzaman, SA Islam, M Arif, MJI Saddam, MT Hossain, SML Kabir and J Uddain, 2022. Microbial quality evaluation of fresh vegetables from distinct markets in urban areas of Bangladesh. Asian-Australasian J. Food Saf. Secur., 6: 1-9.

Orsi RH, J Liao, CR Carlin and M Wiedmann, 2024. Taxonomy, ecology, and relevance to food safety of the genus *Listeria* with a particular consideration of new *Listeria* species described between 2010 and 2022. MBio, 15: e00938-23.

Orsi RH and M Wiedmann, 2016. Characteristics and distribution of *Listeria* spp., including *Listeria* species newly described since 2009. Appl. Microbiol. Biotechnol., 100: 5273-5287.

Osek J, B Lachtara and K Wieczorek, 2022. *Listeria monocytogenes* – How this pathogen survives in food-production environments? Front. Microbiol., 13: 866462.

Osek J and K Wieczorek, 2022. *Listeria monocytogenes*—How this pathogen uses its virulence mechanisms to infect the hosts. Pathogens, 11: 1491.

Piet J, J Kieran, L Dara and AO Avelino, 2016. *Listeria monocytogenes* in food: control by monitoring the food processing environment. African J. Microbiol. Res., 10: 1-14.

Pizarro-Cerdá J and P Cossart, 2018. *Listeria monocytogenes* : cell biology of invasion and intracellular growth. Microbiol. Spectr., 6: gpp3-0013–2018.

Rahman MA, PR Paul, N Hoque, SS Islam, AKMZ Haque, MH Sikder, A Matin, S Yamasaki and SML Kabir, 2021. Prevalence and antimicrobial resistance of *Campylobacter* species in diarrheal patients in Mymensingh, Bangladesh. Biomed Res. Int. 2021: 1-9.

Raschle S, R Stephan, MJA Stevens, N Cernela, K Zurfluh, F Muchaamba and M Nüesch-Inderbinen, 2021. Environmental dissemination of pathogenic *Listeria monocytogenes* in flowing surface waters in Switzerland. Sci. Rep., 11: 9066.

Ravindhiran R, K Sivarajan, JN Sekar, R Murugesan and K Dhandapani, 2023. *Listeria monocytogenes* an emerging pathogen: a comprehensive overview on listeriosis, virulence determinants, detection, and anti-Listerial interventions. Microb. Ecol., 86: 2231-2251.

Redmond EC, CJ Griffith, J Slader and TJ Humphrey, 2004. Microbiological and observational analysis of cross contamination risks during domestic food preparation. Br. Food J., 106: 581-597.

Sarker B, A Mohammad, N Eashmen, MR Akter and SML Kabir, 2020. Isolation, identification and antibiogram profile of *Aeromonas hydrophila* from broiler chickens in Mymensingh Sadar, Bangladesh. Asian-Australasian J. Food Saf. Secur., 4: 22-30.

Schoder D, A Pelz and P Paulsen, 2023. Transmission scenarios of *Listeria monocytogenes* on small ruminant on-farm dairies. Foods, 12: 265.

Seel SK, SML Kabir and MA Islam, 2016. Molecular detection and characterization of *Salmonella* spp. isolated from fresh fishes sold in selected upazila markets of Bangladesh. Bangladesh J. Vet. Med., 14: 283-287.

Shahid AD, Y Lu, MA Iqbal, L Lin, S Huang, X Jiang and S Chen, 2021. *Listeria monocytogenes* crosses blood brain barrier through Rho GTPases induced migration of macrophages and inflammatory interleukin expression. Microb. Pathog., 159: 105143.

Shamloo E, H Hosseini, AZ Moghadam, HM Larsen, A Haslberger and M Alebouyeh, 2019. Importance of *Listeria monocytogenes* in food safety: a review of its prevalence, detection, and antibiotic resistance. Iran. J. Vet. Res., 20: 241-254.

Sharma R, P Garg, P Kumar, SK Bhatia and S Kulshrestha, 2020. Microbial fermentation and its role in quality improvement of fermented foods. Fermentation, 6: 106.

Sharma RK, SS Jalalpure, S Pathak, S Ganapathy, M Desvaux, S Roy and S Hegde, 2024. Molecular detection of *Listeria monocytogenes* from different dairy and street food sources in North Karnataka, India. J. Infect. Public Health, 17: 696-703.

Sharmin S, SML Kabir, HEM Kayesh, AKMZ Haque and MM Rahman, 2013. Bacteriological quality of tap water samples obtained from different sources in and around Mymensingh city of Bangladesh with particular focus on antimicrobial resistance of *Escherichia coli*. Adv. Res. J. Microbiol., 1: 10-17.

Sudarsan K, SML Kabir, AKMZ Haque, FRK Mohammad and AS Yousuf, 2018. Screening of human diarrhoeal samples in Mymensingh city of Bangladesh for the isolation, identification and antimicrobial resistance profiles of *Campylobacter* spp. African J. Microbiol. Res., 12: 771-778.

Szymczak B, 2023. Phenotypic and genotypic characteristics of non-hemolytic L. monocytogenes isolated from food and processing environments. Foods, 12: 3630.

Takahashi H, T Suda, Y Tanaka and B Kimura, 2010. Cellular hydrophobicity of *Listeria monocytogenes* involves initial attachment and biofilm formation on the surface of polyvinyl chloride. Lett. Appl. Microbiol., 50: 618-625.

Uddin MN, SB Neogi, SS Islam, J Ferdous, MSR Khan, S Yamasaki and SML Kabir, 2021. Occurrence and multidrug resistance of *Campylobacter* spp. at duck farms and associated environmental and anthropogenic risk factors in Bangladesh. BMC Infect. Dis., 21: 1139.