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Safety Of Donor Human Milk

Editorial

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Human milk is recognize as the ideal food for infant due to its nutritional and therapeutic significance [21, 22] and mother's own milk has been considered as best food for infants [20, 23]. American Academy of Pediatrics recommended breast milk should be exclusive fed to infants for the first 6 months of life and to be continued for the second 6 months along with the gradual introduction of solid foods [16]. Human milk directly fed to infants from the breast is the safest and optimal the format. In case of insufficient breast milk secretion from mothers [28] due to illness, severe medical conditions or those undergoing tremendous stress [14], breast milk from several well-established human milk banks (HMB) is the practical alternate for supplying breast milk [5, 7, 24].

Safety of Donor Human Milk (DHM) collected at HMB is of great safety concern and is governed by several factors such as strict consideration of eligibility of the donor mother to donate breast milk, handling, processing and storage of donated milk. Donor women willing to give their milk are careful screened for HIV-1, HIV-2, human T-cell leukemia virus 1 and 2, hepatitis B, hepatitis C and syphilis [11]. Breast milk donors are screened based on the following criteria to ensure safety of donor milk for infants [18].

- Must have a good general health
- Should not smoke, exposed to high or sustained levels of passive smoke or uses nicotine replacement therapy
- Should not consume alcohol regularly exceeding recommended alcohol levels for breastfeeding mothers (1 to 2 units, once or twice a week)
- Should not be using or recently used recreational drugs
- Should not have previously tested positive results for HIV 1 or 2, hepatitis B or C, HTLV type I or II or syphilis
- Should not be at an increased risk of Creutzfeldt–Jakob disease
- Should not be currently taking any medication or undergoing any other medical therapy
- Should not be exposed to high or sustained levels of environmental or chemical contaminants

Human milk may be contaminated at any point along the milk pathway during pumping, collection, transport, storage and processing of milk [12]. Diversity in the bacteriological profiles of different fresh human milk samples may be due to the differences in donor's hygiene, collecting and handling methods, and environmental conditions [15, 29]. Major source or factors contributing to bacterial contamination of expressed milk are collection containers and pumps at NICU [13], reuse of collection equipment at home [9]. DHM can be contaminated during collection, storage, or processing [1]. For the safety of DHM, training must be given to all new donors covering the following aspects [18].

- Hand washing and the importance of milk donation
- Good personal hygiene practices
- Collecting and expressing milk including cleaning and using breast pumps and containers
- Storing of donated milk (including cooling and freezing)
- Labelling of donated milk and documenting storage conditions
- Transportation of donated milk

DHM undergo bacterial screening, processed to render it microbiologically safe and stored [17] until are distributed to hospitals or outpatient recipients. Generally, screened donor milk is pasteurized to inactivate pathogens to render it safe for infant feeding [30] and is considered as the best alternative to mother's own milk.Processing of donor milk is important to ensure its safety for feeding infants. Pasteurization of donor milk by low-temperature, long-time (LTLT) method at 62.58ºC/30 min is currently recommended in different international guidelines [2, 11]. LTLT pasteurization of breast milk ensures microbial safety through elimination of potential viral contaminants such as human immunodeficiency virus, human T-lymphoma virus, cytomegalovirus, tuberculosis and other bacterial contaminants [27] but induced heat denaturation of biological components [8]. Recently, mild heat-treatment is suggested for treating donor milk for better retention of bioactive components.

Storage study of human milk revealed that the microbial growth was minimal at 15 °C and remained low at 25 °C during the first

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4-8 hours, but increased rapidly after 4 hours at 38°C. It was concluded that milk can be safely stored for 24 hours at 15°C but only for 4 hours at 25°C [10]. It has been declared that fresh human milk can be stored safely for 96 hours when kept at 4°C without any significant changes in total and gram-negative bacterial counts, macronutrients and immune factors like sIgA and lactoferrin [25] and inhibition of gram-positive bacterial growth [26]. Recently, Eglash (2010) [6] suggested that human milk stored under very clean conditions at 4°C for 5-8 days is acceptable for term infants.

Barriers for success of DHM banks are attitudes health workers, fragmented systems, lack of government policy, negative perceptions of community and detrimental cultural practices [3, 4, 19]. Mothers needs to be encouraged to donate breast milk to human milk banks to serve the nutritional needs of infants deprived of their mother's own milk.

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