Role of Hand Washing and Water Storage in Copper Tank on Incidence of Diarrhea

Sir,

We have read the impressive article of Dr. Falkenberg and Saxena in the recent issue of your journal in which the impact of urban agriculture with wastewater on the incidence of diarrhea in Ahmadabad (Gujarat, India) has been shown.

The unsafe drinking water, lack of sanitation, and inadequate hygiene also have an adverse effect on the incidence of diarrhea mainly in the children.[1] Internalization of food-borne bacteria (*Escherichia coli* and *Salmonella*) into edible parts of the plants is a serious health risk. Internalization of *E coli* and *Salmonella* occurs more in vegetables grown with wastewater in urban areas as waste holds many pathogens.[2] Green leafy vegetables such as lettuce, spinach, cabbage, and other leafy vegetables have increased the risk of internalization of *E. coli* and other pathogens. Many outbreaks of the *E. coli* infection in many countries is due to contamination of vegetables (lettuce, radish, tomato, spinach, cabbage, onion, and carrots) with *E. coli* and other pathogenic bacteria and also consumption of raw vegetables. The sources of bacterial contamination of vegetables and fruits are contaminated water, soil, poor hand hygiene, improper handling, washing, and packaging.[3] Burton and colleagues have observed that hand washing with only water and hand washing with soap and water reduced the presence of bacteria on hand (fecal origin) to 23% and 8%, respectively.[4]

The ancient Egyptians, Indians, and Sumerians have used copper and silver vessels to store and drink water. The Ayurveda describes storing water in a copper vessel overnight and drinking it in the mornings has many health benefits. The method of purification of water by storing in copper pots was mentioned in ancient texts of Ayurveda. Copper is known for its antimicrobial, anti-inflammatory, antioxidant and anticarcinogenic properties.[5,6] In developing countries, many people collect drinking water from surface sources such as ponds, wells, streams, municipal pipes, and stored water from tanks. Water contamination can occur between collections, storage, and serving at homes. Drinking-water stored in Copper pots kills contaminating diarrheagenic bacteria.[6] A device with copper coil also has been shown to kill *E. coli* in water.[6] Copper content (177 ± 16 ppb) in water stored in copper pots was well within the permissible limits of the World Health Organization.[6]

Hence, the use of the copper device or copper water tank to store water and proper hand washing can be of help in reducing incidences of diarrhea.

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Conflicts of interest

There are no conflicts of interest.

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References

1. Falkenberg T, Saxena D. Impact of wastewater-irrigated urban agriculture on diarrhea incidence in Ahmedabad, India. Indian J Community Med 2018;43:102-6.
2. Heaton JC, Jones K. Microbial contamination of fruit and vegetables and the behaviour of enteropathogens in the phyllosphere: A review. J Appl Microbiol 2008;104:613-26.
3. Mritunjay SK, Kumar V. Fresh farm produce as a source of pathogens: A review. Res J Environ Toxicol 2015;9:59-70.
4. Burton M, Cobb E, Donachie P, Judah G, Curtis V, Schmidt WP, *et al.* The effect of handwashing with water or soap on bacterial contamination of hands. Int J Environ Res Public Health 2011;8:97-104.
5. Radha R, Susheela P. Comparative microbiological analysis of water stored in different storage vessels. Int J Pharm Biosci 2015;6:B121-128.
6. Sudha VB, Ganesan S, Pazhani GP, Ramamurthy T, Nair GB, Venkatasubramanian P, *et al.* Storing drinking-water in copper pots kills contaminating diarrhoeagenic bacteria. J Health Popul Nutr 2012;30:17-21.

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