Salmonella enterica serovar Virchow in raw milk of buffalo in Bareilly

A multiple drug-resistant (amoxicillin + clavulanic acid, ampicillin, cefazidime, ceftriaxone) Salmonella enterica serovar Virchow was detected in a fresh milk sample out of the 58 samples collected from different dairies in and around Bareilly. Although present only in one sample, it cannot be ignored because of zoonotic importance of the pathogen and milk being the commonest protein source to most of the Indians. Milk samples were collected from the pooled milk of 58 buffalo dairies in and around Bareilly city and brought to the laboratory aseptically. 100 ml of the milk sample was centrifuged for 20 min at 5000 g and the sediment was seeded into 30 ml tetra-thionate broth, incubated at 37°C for 24 h and plated onto brilliant green agar, McConkey agar and Hekton enteric agar for isolation of Salmonella. The suspected isolates were further characterized using diagnostic polyvalent and monovalent antisera. The isolate was tested for sensitivity using disc diffusion method against 21 antibiotic discs (Hi-Media, Mumbai), viz. amikacin (30 µg), amoxicillin + clavulanic acid (10 µg), ampicillin (10 µg), cephalaxine (30 µg), cipromoxacin (30 µg), chloramphenicol (10 µg), cephalexin (30 µg), cefotaxime (30 µg), cefoperazone (75 µg), ceftriaxone (30 µg), doxycycline (30 µg), furazolidone (50 µg), gentamycin (10 µg), kanamycin (30 µg), nalidixic acid (5 µg), neomycin (30 µg), norfloxacin (10 µg), sulphamethoxazole (300 µg), streptomycin (25 µg), trimethoprim (50 µg) and tetracycline (10 µg) according to CLSI.

Salmonella though commonly found in meat and meat products of buffalo origin, has rarely been reported from buffalo milk and never in India. Although several Salmonella outbreaks due to consumption of dairy milk and milk products are on record, hardly any Salmonella infection outbreak has been reported from buffalo milk. Although prevalence of Salmonella in buffalo milk appears to be quite low in comparison to isolation of Salmonella Typhimurium from 14.5% samples of buffalo milk in Egypt, similar studies in other parts of India and buffalo-rearing regions in the Indian subcontinent have rarely shown buffalo milk positive for Salmonella. Though the serovar has low prevalence, being resistant to multiple antibiotics, highly zoonotic in nature and a common serovar in India in human and animals, isolation of Salmonella Virchow from raw milk of buffalo is of public health significance. Multiple drug resistance (MDR) in a zoonotic pathogen (Salmonella Virchow) might be of public health concern because it not only limits treatment options leading to treatment failure but might also be associated with increased deaths and horizontal transfer of MDR to other potential pathogens in host and in its environment. Thus, the results indicated necessity for observing good dairy practices which are often ignored in suburban dairies.

2. Kaufmann, F., Kaufmann White Scheme, Copenhagen, Denmark, 1972.

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Lion-tailed macaques: on the verge of extinction

Macaca silenus Linn. (family Cercopithecidae), commonly known as ‘lion-tailed macaque’, is an old world monkey which can be cited as a pertinent example in the context of biodiversity conservation. This charismatic primate’s regal physical attributes are ample to fetch it considerable attention, albeit it has gained critical focus for being classified as ‘endangered’ in the IUCN Red List of Threatened Species due to its high likelihood of becoming extinct in the near future. It is also listed on Appendix I of CITES; and Schedule I (Part I) of the Indian Wildlife (Protection) Act (1972), amended up to 2002 (ref. 2).

Macaca silenus inhabits only the tropical rainforests (8°25′N–14°55′N) of the Western Ghats, India, which is one among the 34 biodiversity hotspots worldwide. Endemic to this single geographical compartment, it is numerically one of the smallest among the 15 Cercopithecidae macaque species. Its habitat is
colossally stressed by tremendous population pressure from humans\(^5\), leaving only a meagre 4000 individuals in the wild\(^1\), of which less than 2500 are mature ones\(^2\).

This forces the primate to dwell in minor subsets of its actual natural habitat. Hence, its population dynamics is suffering.

Furthermore, since lion-tailed macaques are typically arboreal, groups residing in the fragmented territories are isolated\(^7\). Unlike *M. radiata* (bonnet macaque), *Semnopithecus entellus* (common langoor) and *S. johnii* (Nilgiri langoor), the three other species that share its habitat\(^6\), the ‘shy’ lion-tailed monkey rarely goes beyond its fragmented precincts\(^3\), resulting in extreme inbreeding depression in the *M. silenus* subpopulations. This leads to a significant recession in the gene pool variability of the species, and consequently abates the fitness of the animal.

However, this flagship species of the Western Ghats is found to breed well in captivity for *ex situ* conservation. But very little has been done to conserve the *M. silenus* population in India, and there is no support for reintroduction of these captivity-bred lion-tailed macaques into the wild.

The present status of the lion-tailed macaques reveals an unwelcome downhill drift in its demography with its census showing a steady retrogressive trend. We better act smart and fast before this amazing creature joins the league of the dodos.

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