Detection and genetic characterization of foot-and-mouth disease viruses in samples from clinically healthy animals in endemic settings

A total of 1501 oral swab samples from Pakistan, Afghanistan and Tajikistan were collected from clinically healthy animals between July 2008 and August 2009 and assayed for the presence of foot-and-mouth disease virus (FMDV) RNA. The oral swab samples from two (of four) live animal markets in Pakistan (n = 245), one (of three) live animal market in Afghanistan (n = 81) and both the live animal markets in Tajikistan (n = 120) all tested negative. However, 2 of 129 (~2%) samples from Gondal and 11 of 123 (9%) from Chichawatni markets in Pakistan were positive for FMDV RNA. Similarly, 12 of 81 (15%) samples from Kabul and 10 of 20 (50%) from Badakhshan in Afghanistan were found to be positive. Serotypes A and O of FMDV were identified within these samples. Oral swab samples were also collected from dairy colonies in Harbanspura, Lahore (n = 232) and Nagori, Karachi (n = 136), but all tested negative for FMDV. In the Landhi dairy colony, Pakistan, a cohort of 179 apparently healthy animals was studied. On their arrival within the colony, thirty-nine (22%) of these animals were found positive for FMDV RNA (serotype A was identified), while 130 (72.6%) had antibodies to FMDV non-structural proteins. Thus, newly introduced animals may be a significant source of the disease in the colony. Only two animals from the cohort were detected as becoming positive for FMDV RNA during a follow-up period of 4 months; however, only 10 animals remained negative for anti-NSP antibodies during this period.