

KYASANUR FOREST DISEASE

ANIMAL GROUP AFFECTED	TRANSMISSION	CLINICAL SIGNS	FATAL DISEASE ?	TREATMENT	PREVENTION & CONTROL
<i>Macaca radiata</i> , <i>Presbytis entellus</i>	Via ticks : Haemaphysalis spinigera, H.turturis	Biphasic illness: erythro-, leuko-thrombocytopenia, encephalitis, epistaxis, diarrhea, shock, death.	Yes : in monkeys and man	None	<i>In houses</i> <i>in zoos</i>

Fact sheet compiled by Manfred Brack, formerly German Primate Center, Göttingen / Germany.	Last update 22.11.2008
Susceptible animal groups <i>Macaca radiata</i> , <i>Presbytis entellus</i> .	
Causative organism Kyasaur forest disease (KFD) virus (Arboviruses, Flaviviridae. Closely related to Omsk hemorrhagic fever virus).	
Zoonotic potential Yes, fatal in man.	
Distribution Shimoga district, Mysore State, India, Karnataka State, India , and NO-Pakistan, still extending in 2003.	
Transmission By ticks : <i>Haemaphysalis spinigera</i> , <i>H.turturis</i> , (<i>Ixodes petaurista</i> , <i>Ornithodoros</i> spp.). The original outbreak 11957 in Karnataka started after forests were cleared for urbanization : arboreal monkeys scavenging on the exposed forest floor became KFD-infected by ticks from the underground.	
Incubation period 3 – 8 days.	
Clinical symptoms In monkeys: in natural infections large numbers of monkeys are found dead, some with anal haemorrhages. In experimental infections: biphasic illness: erythro-, leuko- and thrombocytopenia followed by encephalitic symptoms and finally epistaxis, diarrhea, shock, and death.	
Post mortem findings Anal haemorrhage, pallor of the adrenal cortex, focal liver necrosis with cytoplasmic inclusion bodies, necroses in small and large intestines. Haemorrhages in lungs, kidneys, brain, and adrenals. Nonpurulent encephalitis (Focal microgliosis, perivascular cuffings).	
Diagnosis Serology: (Convalescent phase!): HI-, CF-tests, mass tag PCR.	
Material required for laboratory analysis Serum.	
Relevant diagnostic laboratories 1. Virus Diagnostic Laboratory, Shimoga/ India. 2. Konsiliarlaboratorium für Alpha- und Flaviviren Bundesinstitut für Risikobewertung Diedersdorfer Weg 1 D 12277 BERLIN Tel.: 01888 412 2261 Fax: “ “ 2952 e-mail: j.suess@bfr.bund.de	
Treatment Formalin- inactivated KFD virus vaccine in man highly protective.	



Prevention and control in zoos
Suggested disinfectant for housing facilities
Notification
Guarantees required under EU Legislation
Guarantees required by EAZA Zoos
Measures required under the Animal Disease Surveillance Plan
Measures required for introducing animals from non-approved sources
Measures to be taken in case of disease outbreak or positive laboratory findings
Conditions for restoring disease-free status after an outbreak
Experts who may be consulted PD Dr. J. Süß, Konsiliarlaboratorium, Berlin.
References <ol style="list-style-type: none">1. Banerjee, K. 1988. Kyasanur forest disease. <i>In</i> Monath, T.P.(ed.) <i>The Arboviruses : Epidemiology and Ecology</i>. CRC Press, Boca Raton / USA. PP. 93 – 116.2. Bhat, W. R. 1991. Kyasanur forest disease and decimation of monkeys in Malnad area of Karnataka. <i>Biol. Indica</i> 1 : 59 – 67.3. Brack, M. 1987. <i>Agents Transmissible from Simians to Man</i>. Springer, 1987.4. Calisher, C. H., N. Karabatsos, J. M. Dalrymple, R. E. Shope, J. S. Porterfield, E. G. Westaway, and W. E. Brandt. 1989. Antigenic relationship between flaviviruses as determined by cross – neutralization tests with polyclonal antisera. <i>J. Gen. Virol.</i> 70 : 37 – 43.5. Dandawate, C. N., G. B. Desai, T. R. Achar, and K. Banerjee. 1994. Field evaluation of formalin inactivated Kyasanur forest disease virus tissue culture vaccine in three districts of Karnataka State. <i>Indian J. Med. Res.</i> 99 : 152 – 158.6. Gould, E. A., S. Higgs, A. Buckley, and T. S. Gritsun (2006) Potential arbovirus emergence and implications for the United Kingdom. <i>Emerg. Infect. Dis.</i> 12 : 549 – 5557. Palacios, G., T. Briese, V. Kapoor, O. Jabado, Z. Liu, M. Venter, J. Zhai, N. Renwick, A. Grolla, T. W. Geisbert, C. Drosten, J. Towner, J. Ju, J. Paweska, S. T. Nichol, R. Swanepoel, H. Feldmann, P. B. Jahrling, and W. I. Lipkin. 2006. Mass tag chain reaction for differential diagnosis of viral hemorrhagic fevers. <i>Emerg. Infect. Dis.</i> 12 : 692 – 695.8. Pavri, K. 1989. Clinical, clinicopathologic, and hematologic features of Kyasanur forest disease. <i>Rev. Infect. Dis.</i> 11 : S 854 – S 859.9. Shellabarger, W. 1991. Overview of primate viral zoonotic diseases and their prevention. <i>Am. Assoc. Zoo Vet. Annu. Proc.</i> 1991 : 224 – 234.10. Sreenivasan, M. A., H. R. Bhat, and P. K. Rajagopalan. 1986. The epizootics of Kyasanur forest disease in wild monkeys during 1964 to 1973. <i>Trans. R. Soc. Trop. Med. Hyg.</i> 80 : 810 – 814.