Bundesamt für
Verbraucherschutz und
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Position statement of the ZKBS on risk assessment of Tupaia paramyxovirus according to § 5 Paragraph 1 of the Genetic Engineering Safety Regulations

Tupaia Paramyxovirus (TPMV) is a cytopathogenic paramyxovirus that cannot be assigned to any specific genus within the paramyxoviridae family. It possesses a linear, non-segmented, single stranded RNA genome of negative polarity with a length of 17904 nucleotides. Paramyxoviruses are wide-spread in animals and humans, and include human pathogen or animal pathogen species, such as the mumps virus, measles virus, Newcastle Disease virus or cattle pest virus. Serological cross reactions with known paramyxoviruses have not been detected, although TPMV shows amino acid sequence homology to hendravirus, which is pathogenic for humans and horses [1].

TPMV was originally isolated from the kidney of a tree shrew (*Tupaia belangeri*) imported from Bangkok. No disease symptoms were detected in this animal [1]. Tree shrews are indigenous to south-east Asia and are used as experimental animals in Germany. They are phylogenetically more closely related to humans than other non-primate laboratory animals. The host range of TPMV in cell lines is limited to tupaia fibroblasts or tupaia kidney cells, and no replication has been detected in cell lines of other species, including human cell lines [1, 2]. Also no virus particles were measured following subcutaneous, intraperitonial or intracerebral inoculation of hamsters, mice or rats with TPMV [1]. The glycoproteins of TPMV, which are relevant for the tropism, fuse selectively with tupaia cells [2].

Evaluation

According to § 5 Para. 1 of the Genetic Engineering Safety Regulations (GenTSV) in conjunction with the criteria in Appendix I of the GenTSV, Tupaia paramyxovirus (TPMV) is allocated to **risk group 2**.

Reasons

Although the host range of TPMV is limited to *Tupaia belangeri*, it cannot yet be excluded that TPMV is a pathogen for its host. In addition, TPMV shows homology to hendravirus (risk group 4).

References

1. Tidona CA, Kurz HW, Gelderblom HR, Darai G. (1999). Isolation and molecular characterization of a novel cytopathogenic paramyxovirus from tree shrews.Virology 258: 425 - 434.
2. Springfeld C, von Messling V, Tidona CA, Darai G, Cattaneo R. (2005). Envelope targeting: hemagglutinin attachment specificity rather than fusion protein cleavage-activation restricts Tupaia paramyxovirus tropism. J Virol. 79: 10155 - 10163.