

## **Pharmacologic loss of aggression in the rhesus macaque (*Macaca mulatta*)**

Ladislav Hess, Institut for clinical and experimental medicine, Prague

Jitka Schreiberová, Dept.of anesthesiology and intensive medicine. Medical faculty Hradec Králové

Jiří Málek, Dept.of anesthesiology and intensive care. Medical faculty, Prague

Josef Fusek, Military medical faculty, Hradec Králové

Aggressive behaviour is part of the emotional make-up of man and animals. In animals aggressive behaviour plays an important role when getting food, defending territory and finding a sexual partner. Both genetic factors and the external environment have a part in aggressive behaviour. The influence of hormones, testosterone in particular, is important. A whole number of regions in the brain take part in the emergence or suppression of aggressive behaviour. (prefrontal cortex, the limbic system, the hippocampus, the nucleus amygdala ). Of the neurotransmitters the particularly important ones are serotonin and noradrenalin and a large number of other active substances. Many drugs, commonly used in medicine, change aggressive behaviour. For instance analgetics, antihypertensives, antihistamines, central muscle relaxants, and many others. The animal experiment with drugs influencing aggressive behaviour were performed on primates macaque rhesus (*Macaca mulatta*). The S+ ketamine was used in combination with benzodiazepine, midazolam at varying dosages or medetomidine . In addition a combination of the S+ ketamine with the Telazol tiletamine + zolazepam or a combination of Telazol with medetomidine were also tested. Finally the S+ ketamine with the ultra short-acting opioid remifentanil was tested. All combination of drugs resulted in reduction or complete loss of aggressiveness of macaque rhesus. The pharmacologic reduction of aggressiveness would be used as a non lethal weapons to induce changes of danger behaviour of terrorists and other aggressive persons.

Key words: Macaque rhesus – pharmacologic loss of aggression – non lethal weapons

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