

## 2<sup>nd</sup> International Conference on

# HIV/AIDS, STDs, & STIs

October 27-29, 2014 Embassy Suites Las Vegas, USA

### Kynurenic acid metabolism in piglets after Encephalomyocarditis virus (EMCV) infection

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EMCV is classified within the genus *Cardiovirus* of the family *Picornaviridae*. Clinically, EMCV causes a sudden death syndrome in piglets (due to acute myocarditis), and it has also been associated with reproductive failure. The most symptoms are circulation insufficiency and depression. Dysfunction of heart has been suggested to be involved; however the mechanism has not been elaborated yet. In addition, the viral infection affects the central nervous system (CNS) but no reliable data are available yet. The increase of tryptophan metabolism along the kynurenine pathway in the periphery and in the CNS in human and non-human subjects with inflammatory diseases (viral, bacterial, fungal and parasitic infections, autoimmune diseases, meningitis and septicemia) has been demonstrated. In the brain and in the periphery, kynurenic acid (KYNA) is synthesized from L-kynurenine by using several kynurenine aminotransferases (KATs). Piglets with an age of 8 weeks were infected intranasal and per oral with the EMC Virus (8 ml, EMCV strain B279/95, 10<sup>7</sup> TCID 50 ml) (N=7) or medium (control, CO, N=5). Clinical exams were carried out twice a day to verify the infection state. At least once daily body temperature was measured and the animals were examined for clinical signs (general physical examination, with special respect to heart and lung). Blood samples were collected before virus inoculation and at 1, 2, 3 and 4 days post inoculation (DPI). Six days after EMCV infection piglets were decapitated, brain removed and 15 brain regions i.e. frontal cortex, parietal cortex, temporal cortex, hippocampus, caudate nucleus, putamen, globus pallidus, thalamus, hypothalamus, substantia nigra, cerebellum, bulbus olfactorius, midbrain, pons and medulla were dissected. KAT I and KAT II activities measurement were performed using radioenzymatic method. Measurement of KYNA was performed using HPLC method. The macrophage activation marker neopterin was assayed by ELISA using kits available commercially. Beta-microglobulin was examined by ELISA employing commercially available kits. In EMCV infected piglets we observed a time dependent alteration of KYNA and neopterin levels in the plasma. The highest KYNA levels were seen after 3th days (341% of CO; p<0.001) of infection. KAT I and/or KAT II activities were increased significantly in selected brain regions. In summary, notable activation of kynurenine metabolism and immune system was observed already one day after EMCV infection. Revealed data suggest that an enhancement of kynurenine metabolism in the periphery and CNS can be involved in the circulation insufficiency and depression, respectively, and likely is in part a cause for the sudden death.

#### Biography

H Baran is presently Head of the Karl Landsteiner Research Institute for Neurochemistry, Neuropharmacology, Neurorehabilitation and Pain Treatment Mauer, Lower Austria. From 2005 - 2011 she was the head of the Neurochemical Laboratory Karl Landsteiner Institute Mauer and Head of Neurophysiology, Veterinary Medical University Vienna. In the year 1998-2005, she was Assoc. Prof. at Institute of Pharmacology and Toxicology, Veterinary Medical University Vienna.

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