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Glycosphingolipid-mediated interaction of Shiga toxin with the human endothelium: Status quo of receptor research

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Certain pathogenic *Escherichia coli* strains belong to the group of Shiga toxin (Stx)-producing *E. coli* (STEC), whereof the subgroup of entero hemorrhagic *E. coli* (EHEC) may cause epidemics like the 2011 European *E. coli* O104:H4 outbreak (1). EHEC are implicated in a wide range of clinical complications in humans such as the potentially lethal hemolytic uremic syndrome (HUS). Once released from the gut into the blood circulation, Stxs are transported via highly debated mechanisms to the target endothelium with putative involvement of leukocytes and/or lipoproteins as delivery vehicles (2, 3.) Microvascular endothelial cells of human kidney and brain are the preferential targets (4, 5). Injury of which is key in the development of HUS and damage of the blood-brain barrier 6. Stxs specifically bind to the glycosphingolipids (GSLs) globotriaosylceramide (Gb3Cer) and globotetraosylceramide (Gb4Cer) followed by internalization into the cell and eventual cell death, Lipid raft association of GSL receptor in the plasma membrane. (5). is supposed to play a crucial role in binding, uptake, retrograde transport and cytotoxicity of Stxs. In this presentation the current knowledge on the molecular mechanisms of GSL-mediated interaction of Stxs with the human endothelium will be presented and discussed.

Biography

Ivan U Kouzel has received his PhD in 2014 at the age of 28 years from the University of Münster. He is currently Postdoctoral Researcher in the group of Prof Dr Johannes Müthing, Institute for Hygiene, Münster, Germany, headed by Prof Dr H C Helge Karch. He is involved in 5 publications in reputed journals, where he holds the first authorship in 2 publications.

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