

TRANSPLANTATION OF FAECAL MICROBIOTA MODIFIES CLINICAL-HISTOLOGICAL RESPONSE OF THE PGF ANIMAL MODEL WITH INDUCED ULCERATIVE COLITIS

Stanislav Lauko¹, Sona Gancarcikova¹, Gabriela Hrcikova², Vanda Hajduckova¹, Martin Janicko³, Lubos Ambro⁴, Izabela Bertkova⁵, Emilia Hijova⁵, Anna Kamlarova⁵, Monika Kvakova⁵, Zuzana Gulasova⁵, Ladislav Strojny⁵, Vlasta Demeckova⁶, Zuzana Andrejcakova⁷, Dagmar Mudronova¹, Drahomira Sopkova⁷, Scarlett Maresova⁸, Daniela Nemetova¹, Ivan Pacuta¹, Radomira Nemcova¹

¹Department of Microbiology and Immunology, University of Veterinary Medicine and Pharmacy in Kosice, Slovak Republic, stanislav.lauko@uvlf.sk

²Institute of Parasitology, Slovak Academy of Sciences in Kosice, Slovak Republic

³2nd Department of Internal Medicine, Faculty of Medicine, Pavol Jozef Safarik University and Louis Pasteur University Hospital in Kosice, Slovak Republic

⁴Central for Interdisciplinary Biosciences in Kosice, Slovak Republic

⁵Center of Clinical and Preclinical Research – MEDIPARK, Faculty of Medicine, Pavol Jozef Safarik University in Kosice, Slovak Republic

⁶Department of Animal Physiology, Institute of Biology and Ecology, Faculty of Science, Pavol Jozef Safarik University in Kosice, Slovak Republic

⁷Department of Biology and Physiology, University of Veterinary Medicine and Pharmacy in Kosice, Slovak Republic

⁸Small Animal Clinic, University Veterinary Hospital, University of Veterinary Medicine and Pharmacy in Kosice, Slovak Republic

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Objectives

Study of the influence of transplantation of faecal microbiota (FMT) on clinical-histological response of the pseudo germ-free animal model (PGF) after chemically induced acute ulcerative colitis (UC).

Methods

The *in vivo* experiment was carried out on SPF (specific pathogen free) female mice of BALB/c line. After obtaining the PGF model with reduced intestinal microbiota and 5-day decontamination of SPF mice by *per os* administration of amoxicillin and subcutaneous administration of ciprofloxacin, the animals were divided to two groups: the FMT group (n=18) without induction of UC and group DSS-FMT (n=27) with induction of acute UC by means of 5-day exposure to 5 % DSS (dextran sodium sulphate) and subsequently subjected to 5-day FMT therapy. The objective evaluation of the clinical state of the animal model during the experimental procedure was carried out by a point-assigned system DAI (disease activity index). The damage to the colon tissue was evaluated qualitatively by analysis of selected morphometric parameters employing a light microscope (Axiolab, Germany).

Results

Transplantation of FMT from a human donor resulted in significant decrease in the score of rectal bleeding in animals with mild form of UC (DSS-FMT/Mi, $p < 0.05$) on day 3 from transplantation of FMT compared to medium DSS-FMT/Mo and serious form of the disease DSS-FMT/S. Similar effect was observed with respect to total DAI in comparison with the period after exposure to DSS, confirmed by a significant

decrease in all forms of UC ($p < 0.05$; DSS-FMT/Mi, DSS-FMT/Mo), ($p < 0.01$; DSS-FMT/S). The mucous membrane of the colon in mice with the mild form was affected positively by FMT transplantation which was confirmed by increased area of the section of villi, increased villi height and crypt depth ($p < 0.001$) not only in comparison with FMT group and both forms of UC (DSS-FMT/Mo, DSS-FMT/S), but also in comparison with the period after induction of acute UC ($p < 0.05$).

Conclusion

After the transplantation of FMT the model animals DSS-FMT/Mi and DSS-FMT/Mo showed a decrease in the seriousness of UC, as the damage to colon tissue as well as DAI in these animals was significantly reduced.

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