

ERRATA ke sborníku XXVII. konference mladých mikrobiologů TOMÁŠKOVY DNY 2018

str. 88: chybí abstrakt

P 26.

Morphological and biochemical characterization of sulfate-reducing bacteria isolated from the large intestine of rodents with colitis

Jiří Cejnar (1), Jozef Kováč (1), Ivan Kushkevych (1)

(1) Department of Experimental Biology, Faculty of Science, Masaryk University, Kamenice 5, 625 00 Brno, Czech Republic

Introduction. Sulfate-reducing bacteria (SRB) are anaerobic microorganisms which are often isolated from the environmental sources such as soil, lakes, and marshlands as well as they are also present in the large intestine of humans and animals. Dominant genus of SRB found in the gut microbiome composition was identified as *Desulfovibrio*. This microbial group use energy from the oxidation of organic compounds in the process of sulfate reduction. Sulfate is the final electron acceptor for their growth and reduced to hydrogen sulfide. This process is called “dissimilatory sulfate reduction” or “sulfate respiration”. The concentration of sulfate in the gut depends on its present in the food or products of the fermentation process. Its concentration in the large intestine play important role for SRB growth which leads to the production of hydrogen sulfide in high (or toxic) concentrations. This may be the results in inflammation and death of the epithelial bowel cells and therefore in development of inflammatory bowel disease (IBD), including ulcerative colitis (UC). The high amount of SRB and concentration of hydrogen sulfide produced in patients with an IBD indicate that SRB and their metabolism are included in the development and the etiology of these diseases.

Methods. For morphological characterization of intestinal SRB, Gramm staining and DAPI fluorescent microscopy were used. Sulfate ions concentration in the medium was determined by turbidimetric method and accumulation of hydrogen sulfide produced by SRB was assayed by methylene blue method.

Results. Morphology of bacterial cell was observed as vibrio shaped in size of 2.4-3µm in length and 0.4µm in diameter. The percentage ratio of SO_4^{2-} consumed and S^{2-} ions produced was calculated. It was observed that hydrogen sulfide production was increased (4.10 mM) in samples from rats with UC compared with healthy samples (3.99 and 3.55 mM). However, sulfate consumption was increased in the same way, 9.40 mM (healthy) and 9.72 mM (UC).

Conclusion. According to obtained results, samples isolated from the bowel of rodents were identified by morphological, physiological and biochemical properties as *Desulfovibrio* species. Although the parameters of consumption of SO_4^{2-} and production of S^{2-} ions were higher in samples isolated from rodents with UC than in healthy ones.

str. 89: v seznamu prvních autorů chybí Cejnar J.