

6th Annual Conference on

MICROBIOLOGY

&

Annual Conference on

MICROBES AND BENEFICIAL MICROBES

October 16-17, 2017 Baltimore, USA



Johann Orlygsson

University of Akureyri, Iceland

Amino acid catabolism of *Thermoanaerobacter* and *Caldanaerobacter* species

Thermoanaerobacter strains have been widely investigated for biofuel production from carbohydrates while proteins and amino acids catabolism have received less attention. Amino acid catabolism is challenging under anaerobic conditions unless hydrogen is removed. Recent reports have demonstrated that *Thermoanaerobacter* strains can degrade branched-chain amino acids (BCAAs) to a mixture of their corresponding fatty acids (BCFAs) and alcohols (BCOHs) when thiosulfate is present. The aim of the presented work to evaluate the ability of these genera to degrade amino acids and better understand the mechanisms dictating the observed end product ratios. The type species of the genera of *Thermoanaerobacter* and *Caldanaerobacter*, were investigated in batch culture for each of the proteogenic amino acids with and without the addition of thiosulfate as an electron acceptor. Some strains in the genus could utilize serine and threonine without the addition of thiosulfate with acetate and ethanol being the dominant products while BCFA/BCOH ratios from BCAA were highly dependent on species and substrate when thiosulfate was added. BCAA catabolism resulted mixtures of the corresponding BCOH (0.5-5 mM) and BCFA (3.5-15.5 mM) with partial substrate utilization being observed in some cases. Altering the liquid-gas phase ratio had an impact on end product ratios; in the case of *C. subterraneus* subsp. *yonseiensis*, increasing the L-G ratio from 1.00 to 5.88, the BCOH formation increased more than 5-fold (with thiosulfate) and less BCFA were produced.

Biography

Jóhann Örylgsson is working as a Professor at University of Akureyri, Iceland. He was awarded PhD in Microbiology, Swedish University of Agricultural Sciences, Sweden. He was awarded "post-doc" in Groningen, Holland. He has been a teacher at the academic institutions mentioned above. Has been responsible for research projects of two master Dutch students (Uppsala and Groningen) and five master students have finalized their master thesis's at the University of Akureyri (UA) within various projects of energy biotechnology (from 2006 – 2009). Currently two MS students are enrolled under my supervision. Also I supervised two MS students in 2009-10 from RES, The School of Renewable Sciences. His experience includes various programs, contributions and participation in different countries for diverse fields of study. Her research interests reflect in her wide range of publications in various national and international journals.

jorlygs@unak.is

Notes: