MICROBIOLOGY AND MOLECULAR BIOLOGY

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ABSTRACTS

Perturbations in the Fecal Microflora of Red Squirrels Induced by Dietary Tannic Acid. T. DeNeff, K. Eberly, E. Mould, Department of Biology, Saint Mary's College, Notre Dame, Indiana 46556.—Dietary tannic acid (0,0.5,1,2, and 5%) causes perturbations in the fecal flora of red squirrels whether diets are fed in random order or in order of increasing tannic acid concentration. The extent of that perturbation appears to be related to the *in vitro* tannic acid sensitivity of the microorganisms. Tannic acid containing diets were fed for a period of 7 days; fecal samples were aseptically homogenized with glass beads, diluted in saline, and plated on trypticase soy agar, eosin methylene blue agar, K F streptococcus agar, Saboraud's glucose agar, blood agar, and mannitol salt agar. Plates were incubated for 48 h. at 33 °C and counted; representative organisms were isolated and identified. Direct counts and gram stains were made from fecal samples to evaluate overall effects of tannic acid on the anaerobic fecal flora. Animals were returned to a control diet for 3 days, and then fed the next diet. Diets were fed in a random pattern.

Control of S-Adenosylmethionine Synthetase in *Mucor racemosus*. J. R. Garcia, Department of Biology, Ball State University, Muncie, Indiana 47306.—The specific activity of S-adenosylmethionine (SAM) Synthethase, was examined in cultures of the dimorphic fungus *Mucor racemosus* during the aerobic conversion of yeasts to hyphae. Previous studies showed that the intracellular concentration of SAM increased during the conversion and that the increase closely paralleled the emergence of germ tubes. The specific activity of SAM Synthetase also increased during the transition in cell type and began to decrease only after the intracellular concentration of SAM had peaked. Experiments with the morphological mutant *COY*, which requires high levels of methionine for the shift in cell type, indicated that the increase in specific activity (and the subsequent increase in SAM) may play a key role in morphogenesis. When *COY* was grown in the absence of methionine, a ten-fold decrease in the intracellular concentration of SAM occurred and the culture failed to produce hyphae. However, a twelve-fold increase in the specific activity of the synthetase was observed. If the mutant was grown in the presence of methionine there was a shift in morphology and an increase in the intracellular conc. of SAM. The specific activity of the synthetase increased and the magnitude was comparable to that seen in the wild type. In experiments with cycloleucine, an inhibitor of SAM Synthetase, the morphological transition was inhibited thus further strengthening the notion that the increase in specific activity (and in the intracellular concentration of SAM) is necessary for morphogenesis.

Pathways of Glucose and Fructose Catabolism by *Azospirillum brasilense* and *A. lipoferum*. Edwin M. Goebel, Department of Biological Sciences, Indiana University-Purdue University at Fort Wayne, Fort Wayne, Indiana, 46805 and Noel R. Krieg,

Department of Biology, Virginia Polytechnic Institute and State University, Blacksburg, Virginia, 24060.—Members of the genus *Azospirillum* have been found to fix nitrogen in association with the roots of non-legume plants (e.g., corn, wheat, millet) in both tropical and temperate climates. It was known that the organisms were unable to grow with most disaccharides and polysaccharides, however the organisms grew well *in vitro* with simple sugars and organic acids. Previous results had also shown that *A. lipoferum* was able to use glucose as a sole source of carbon while *A. brasilense* was unable to grow with this monosaccharide. Our research was designed to answer two questions: Which pathways were used for the catabolism of glucose and fructose; and what factors allowed *A. lipoferum* to utilize glucose. The type strains of both species were cultured aerobically in a chemically defined medium with a fixed source of nitrogen. Cell extracts were prepared by passage through a French Pressure Cell and both soluble and membrane fractions were obtained by centrifugation. We assayed for the activities of the unique enzymes of the Embden-Meyerhoff-Parnas (EMP), Enther Doudoroff (ED) and Hexose Monophosphate (HMP) pathways, as well as the enzymes of the tricarboxylic acid (TCA) cycle. *A. lipoferum* was found to have a functioning EMP, ED and TCA pathways. It was found that *A. brasilense* contained all of the enzyme activities needed for the utilization of glucose, but was unable to take up radioactively labeled glucose. *A. lipoferum* was found to take up labeled glucose and both strains took up labeled fructose.

Local Antibody in Experimental Allergic Uveitis. CAROLYN M. KALSOW and CHERYL BARBATI, Department of Biology, Hope College, Holland, Michigan, 49423. Experimental allergic uveitis is an animal model developed to study the hypothesis that some human uveitides have an autoimmune etiology or component. Studies in the animal model have shown a lack of correlation of serum antibody levels to disease severity. In addition there has been a similar absence of correlation of antibody titers to disease in uveitis patients. In attempting to understand the immune mechanisms involved in this model disease, we have turned our attention to a study of local antibody in this model.

Using an enzyme linked immunosorbent assay (ELISA), antibody levels of serum and ocular tissues were measured in guinea pigs in EAU. These guinea pigs showed antibody activity to retinal extract in serum as well as in ocular tissues. The activity in serum was 2-6 times greater than that of the ocular tissues. Using a quantitative radial immunodiffusion system, levels of IgG were also measured in these sera and tissues. Again the levels in the serum were greater than those of the tissues. However, the ratio of antibody activity to IgG level was less in the serum than in the tissues.

These results indicate not only that antibody is present in ocular tissues during EAU, but that its presence there is not simply due to serum leakage into the inflamed tissue.