COMPARATIVE GASTROENTEROLOGY

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Resumé of: STAIR EL, RHODES MB, WHITE RG, MEBUS CA. **Neonatal Calf Diarrhea: Purification and Electron Microscopy of a Coronavirus-Like Agent.** *Am J Vet Res* 33(6):1147, 1972

A previously undescribed coronavirus-like agent was present in diarrheic fecal samples obtained from neonatal calves in 19 herds. Procedures used for detection of the virus were sucrose density gradient ultracentrifugation followed by electron microscopic examination of negative stains of the bands thus obtained. Characteristics of the purified virus included: 1) surface projections characteristic of the coronavirus group, 2) an average size of 126 nm including the surface projections, and 3) a density of 1.2 by isopycnic density gradient ultracentrifugation. Procedures used had the following advantages: 1) adaptation of the virus to growth in cell culture was unnecessary for identification, 2) important biophysical parameters leading toward classification of the virus were determined from field-collected material, and 3) adequate quantities of purified antigen were available for production of specific antibody in rabbits which could be used at later dates for immunofluorescent assay purposes.

The methodology used should be applicable to study of viral enteric disease in various species, including man.

Resumé of: HARROP CJF, BARKER S. **Blood Chemistry and Gastrointestinal Changes in the Developing Red Kangaroo (*Macgaleia rufa*, Desmarest).** *Aust J Exp Biol Med Sci* 50:245-249, 1972

Herbivorous mammals have an enlarged region in their alimentary tracts where less readily di-

gestible components of their diet, such as cellulose, are degraded by symbiotic microorganisms and made available to the animal. In some species—eg, rabbit and horse, the cecum predominates, while in others—eg, ruminants such as sheep and cattle, the stomach assumes this role. The macropod marsupials (kangaroos and wallabies) are perhaps more closely aligned with the ruminants in an anatomic sense, as the forestomach is enlarged and contains an extensive population of microorganisms. Physiologically, however, they seem to occupy an intermediate position between ruminant and nonruminant herbivores.

A large proportion of the carbohydrates fermented in the stomach of adult ruminants is converted to steam-volatile fatty acids (VFA), such as acetic, propionic, and butyric acids, which are absorbed and provide a major energy source for the animal. Consequently, levels of VFA in the peripheral blood of adult ruminants are generally higher than those of nonruminant herbivores, whereas concentrations of reducing sugars, such as glucose, are generally lower. The present investigation indicated that in adult red kangaroos, levels of VFA are more typical of nonruminant herbivores, while those of reducing sugars occupy a position intermediate between ruminant and nonruminant species.

Blood sugar concentrations of suckling ruminants are high like those of nonruminant herbivores and decrease to adult levels in the first 6 to 13 weeks of life. In pouch-young red kangaroos, blood sugar concentrations were found to be similar to adult levels both in wholly suckling animals (160 to 186 days of age) and in animals suckling and eating solid food (195 to 256 days).

It has been suggested that the decrease in

blood glucose levels in growing lambs is due to a change in erythrocyte metabolism. In pouch-young red kangaroos in this study, changes in erythrocyte type occurred at a much earlier age than the animals used to measure blood sugar levels. Nucleated erythrocytes, which are present at birth, had disappeared from the blood circulation after 12 days, and those containing "fetal" hemoglobin had largely disappeared after 90 days.

Some studies have shown that the concentra-

tion of VFA in the peripheral blood of suckling lambs is low like that of nonruminants, and that it increases to adult levels in the first 3 months of life. In the present study, VFA levels in wholly suckling pouch-young were found to be significantly lower than in those both suckling and eating solid food, and in adults. This increase might be related to the presence of a more diverse bacterial population in the stomach of pouch-young which are eating solid food as a part of their diet.