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TALLOW COATING OF UREA AND FEATHER MEAL

The amount of urea that can be used in ruminant diets is frequently limited by the formation of high concentrations of ammonia in the blood, which poisons the animal. Battelle Memorial Institute, with the cooperation of Professor William Tyznik of Ohio State University, has been investigating the feasibility of controlling the rate of ammonia release in the rumen by coating urea with hydrogenated tallow (see the Director's Digest No. 59, May, 1969).

In recent experiments at Battelle, using the fluidized-bed spray-coating technique, urea was coated with hydrogenated tallow to 4, 14 and 22% tallow. Water leach tests showed that these samples leached 86, 55 and 10% respectively in five hours. Samples of these coated urea products have been subjected to *in vivo* and *in vitro* studies by Professor Tyznik using sheep and sheep rumen fluid. The data have not yet been summarized and completely evaluated, but indicate that the two higher levels of tallow coating reduce the maximum concentration of ammonia in the rumen and blood stream. However, the maximum concentration of ammonia occurs at about the same time after feeding for both the coated and uncoated urea. This is in agreement with results obtained with other types of coatings and diet mixtures designed to retard the rate of urea release and ammonia formation.

A related coating study supported by FPRF involves the tallow coating of feather meal to increase acceptability in rations for dairy cows. You will recall that Professor Rakes at North Carolina State University found that hydrolyzed

feather meal was a very satisfactory protein supplement for dairy cows, but a period of several days of adaptation may be required to induce cows to accept rations containing even small amounts (4%) of feather meal (see the Director's Digest No. 53, November, 1968). In an attempt to overcome this problem, Dr. Herman Nack and his associates at Battelle Memorial Institute prepared pelleted feather meal and coated the pellets with hydrogenated tallow (5% level of coating). The coated, pelleted feather meal was forwarded to Professor Rakes for acceptability tests with dairy cows. Preliminary results show that acceptability of a ration concentrate containing 6% feather meal was greatly improved by pelleting and coating the meal; however, cows still reduced their consumption of rations containing the feather meal (40% reduction for untreated feather meal, 20% reduction for pelleted, coated feather meal). Tests are now in progress to determine whether or not better acceptability will result if the entire ration concentrate is pelleted and fed with the pelleted, coated feather meal.

PHOSPHATES IN DETERGENTS - A POLLUTION PROBLEM

Most "built" heavy duty laundry detergents contain relatively large amounts (25-40%) of phosphates to improve their performance by chelating (tying up) the calcium and other heavy metal ions to prevent their deposition on the fabric. These phosphates, which are not removed by current methods of sewage treatment, have been blamed for the rapid rate of lake entrophication. As a consequence, water pollution regulatory agencies are pushing hard for laws or regulations to ban the use of phosphates in detergents. Soap and Detergent Association spokesmen maintain (1) that the evidence linking detergent phosphates with lake entrophication is not convincing, and (2) that there is no suitable substitute for phosphates in built detergents. Nevertheless, one large detergent manufacturer (P & G) has announced that nitrilotriacetic acid (NTA) will replace 25% of the phosphate in one third of the company's output and that experimental detergents have been produced with a 50% phosphate reduction.

Question: Will a ban on phosphates result in increased use of soap and other tallow based detergents? At this time no one is willing to venture a positive answer.