

DEVELOPMENT OF METHODS OF DETERMINATION UREA IN BLOOD, MUSCULAR FABRICS AND LIVER OF PIGS

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Nitrogen losses from agriculture to air and water are perceived to be a major global environmental problem. Livestock farming is a significant source of reactive N in the environment. Of all the NH₃ and N₂O released into the environment because of human activity, approximately 70 and 30%, respectively, are estimated to arise from livestock farming. The purpose of livestock farming is to convert the carbohydrates and proteins in animal feed to food sources for humans; however, only 5 to 30% of animal feed N usually meets this goal. The rest is excreted by animals and can escape into the environment.

The ability to estimate N excretion rate of animals might be used to minimize pollution as well as decrease the use of excess feed protein. For example, accurate estimates of manure N production rate may improve models to predict farm-level losses of N, and improve planning for manure handling. In addition, plasma or blood urea N (BUN) concentration may be useful as an indicator of protein status within a group of animals, and could help to fine-tune diets or identify problems with a feeding program. Milk urea N concentration is used to predict N excretion in dairy cows. Blood and plasma urea N concentration are proportional to milk urea N in dairy cows and therefore may be useful as a predictor in much the same way. Differences in predictor values for various species may provide insight into differences in N utilization in these species.

Urea is the main nitrogenous end product arising from the catabolism of amino acids that are not used in biosynthetic reactions in mammals. Urea production should reflect not only alterations in the dietary intake of protein and patterns of utilization of amino acids but also an animals ability to retain dietary nitrogen in the body. It has

been found that BUN is related directly to protein intake and inversely to protein quality.

Our first objective was to evaluate the potential for BUN concentration (mg%) in pigs blood. The second objective was to evaluate the potential and quantity urea in muscular and liver of pigs. Our method is based on urea fermentation under the action of urease soya with ammonia release, which changes the buffer capacity, that is, the pH of the solution.

A new method for determining urea in blood (plasma, serum), liver and muscle tissue is developed, as criteria of metabolism in the organism of animals and product quality. The method is based on urea fermentation under the action of urease soybean with the release of ammonia and carbon dioxide, which changes the buffer capacity, that is, the pH of the solution.

It has been established that in the blood of pigs, the content of urea is on average 30 mg%, in muscle tissue (meat) - 24 mg% and liver 30,1 mg%.

This study demonstrates the feasibility of using BUN concentration to predict N excretion rate for various domestic animals.

Keywords: UREA, BLOOD PLASMA, LIVER, MUSCULAR TISSUE, PIGS, UREASE, BUTTER SOLUTION, pH VALUE.