

ABSTRACT

Weanling Rats were used as experimental models to determine the changes in body composition, insulin output and rate of weight gain during P.E.M. and recovery from P.E.M. on different diets. The treatments were 1) ad libitum food intake to obtain "normal" growth, 2) restricted food intake to produce malnutrition, and 3) restricted food intake followed by any of five experimental diets fed in ad libitum quantities.

The malnourished rat model showed an increase in total body water %, total body protein % and decreased total body fat %. Fasting plasma insulin levels were low and rate of weight gain was negligible.

Recovery from P.E.M. occurred in two stages: 1) an early spate of rapid growth associated with increased insulin output and increased synthesis of lean tissue and 2) a later spate of slow growth associated with decreased insulin output and increased deposition of fat tissue. Rapid recovery was achieved on only two of the diets.

The rats which recovered on the diet which supported "normal" growth in control rats demonstrated "normal" body composition. "Abnormal" body composition was observed in rats recovering on a high protein, high energy diet which had a high percentage of fat. They had increased total body fat % after recovery.

Rats failed to recover on diets which were low in protein although adequate in energy. They demonstrated increased total body fat % and decreased total body protein %. Fasting plasma insulin levels and rates of weight gain were low.

Rats failed to recover on a high energy, high protein diet which had a high percentage of sucrose. There was a high mortality on this diet. Total body protein % was increased and low plasma insulin levels were obtained.