

# COMPARATIVE STUDY OF COLOSTRUM AND MILK COMPOSITION OF SEVEN BREEDS OF SWINE

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## ABSTRACT

Colostrum and milk samples taken at 1, 14, 28, and 35 days after farrowing from 31 sows of seven breeds (Yorkshire, Landrace, Lacombe, Duroc, Hampshire, Berkshire, and Large Black) were chemically analyzed to study the effects of breed and stage of lactation on composition. Breed was a significant source of variation for fat, sodium, and magnesium percentages of milk, and potassium percentage of the colostrum. Significant breed differences were also found in energy and ash, total solids, and phosphorus percentages. Yorkshire, Hampshire, and Lacombe were gener-

ally higher and Berkshire and Large Black lower in milk constituents than the other breeds. Significant changes in total solids, protein, ash, calcium, and phosphorus percentages were observed with the advance in lactation. The overall means for the different determinations of milk corrected for the effects of breed and stage of lactation were: specific gravity, 39 Quevenne/15.6 C; energy, 1.11 kcal/g; ash %, 1.04; total solids %, 19.0; fat %, 6.3; protein %, 5.4; calcium %, 0.20; sodium %, 0.04; potassium %, 0.10; magnesium %, 0.02; and phosphorus %, 0.17.

## RESUME

On a étudié la composition chimique du colostrum et du lait de truies en prenant comme facteurs, sept races de truies (Yorkshire, Landrace, Lacombe, Duroc, Hampshire, Berkshire, et Large Black) et quatre stades de lactation (1, 14, 28, et 35 jours après la mise-bas). Les pourcentages de gras, sodium et magnésium du lait de même que le pourcentage de potassium présent dans le colostrum variaient d'une façon significative entre les races de truies étudiées. L'énergie, les pourcentages de cendre, de matières solides totales, et de phosphore variaient aussi significativement entre les races. Les races Yorkshire, Hampshire, et Lacombe étaient supé-

rieures aux autres races en ce qui a trait à la composition chimique du lait. Avec le stade de lactation des changements significatifs de teneur en solides totaux, protéines, cendres, calcium, et phosphore ont été observés. Les moyennes générales des diverses déterminations des constituants du lait corrigées par rapport aux effets de la race et du stade de lactation furent: gravité spécifique, 39 Quevenne/15.6 C; énergie, 1.11 kcal/g; % cendre, 1.04; % solides totaux, 19.0; % gras, 6.3; % protéines, 5.4; % calcium, 0.20; % sodium, 0.04; % potassium, 0.10; % magnésium, 0.02; et % phosphore, 0.17.

## INTRODUCTION

Success in swine production depends primarily upon the rate and efficiency of gain in body weight of the growing animals. During the early postnatal growth and development, the young pigs depend almost entirely for their nourishment upon the milk yield of their dams. Therefore, the amount of milk produced and its composition are closely associated with the rate of growth and development of the young.

The changes in composition that occur during the transition from colostrum to milk and the percentage of the major and minor constituents of sows' milk during the course of lactation have been reported by many workers (Hughes and Hart 1935; Braude et al. 1947; Bowland et al. 1949a, b; Heidebrecht et al. 1951; Smith 1952; Perrin 1954, 1955; and Lodge 1959), and the existing literature has been reviewed by Bowland (1965) and Jylling and Sørensen (1960). All these reports, however, dealt with samples obtained from one or a few breeds of swine. Comparative studies similar to those conducted on other farm animals are not available for swine. In the few reports where more than one breed was studied