60% of the sow colostrum whey protein, and approx. 80% of the immunoglobulin is IgG. Chromatographic studies on Sephadex G-200 and DEAE-cellulose indicate that anti-(*Escherichia coli*) antibodies in colostrum are associated with IgA and IgM. However, only the IgM antibody is acquired as serological passive immunity in the neonatal piglet and this declines to small amounts in the first week of life.

During the first week of lactation, the immunoglobulin concentration of porcine milk falls to approximately one-fifth of the original colostrum concentration. These changes are most marked in IgG and IgM, which show an approx. tenfold decrease, whereas the IgA shows only a twofold decrease in this period. As a consequence of these changes, IgA becomes the predominant immunoglobulin and anti-(*E. coli*) antibody in sow milk after the first 72 hr. of lactation.

The passage of sow milk IgA and anti-(*E. coli*) antibodies through the alimentary tract was studied in young pigs with re-entrant fistulae prepared in the upper duodenum.

IgA appears in the duodenum within 10 min. of feeding, at concentrations comparable with those in the milk, and continues at similar concentrations for approximately 20 min. falling to minimum values in 1 hr.

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Interactions between the Alkaline-Earth Metal Ions and Purified Bovine Caseins

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α_{s1} -, β - and κ -Casein fractions were prepared from the milk of an Ayrshire cow by chemical fractionation and chromatography on DEAE-cellulose (Thompson & Kiddy, 1964; Thompson, 1966; McKenzie & Wake, 1961). Equilibrium dialysis was used to study the interactions of these proteins with Ca^{2+} , Sr^{2+} and Ba^{2+} ions by radioactive isotope-dilution techniques to determine metal ion concentrations. Binding varied with the free cation concentration, pH and the ionic strength of the medium. The relative order of binding capacity for the three fractions was $\alpha_{s1} > \beta > \kappa$.

Binding to α_{s1} -casein in tris-hydrochloric acid buffer, pH 7.4 and I 0.1 at 25°, increased with metal ion concentration; the protein precipitated at about 10mM-metal ion. β - and κ -Caseins behaved in a similar fashion except that κ -casein was not precipitated, even at higher metal ion concentrations. Increasing the ionic strength decreased alkaline-earth binding, but over the pH range 7–9 pH had little effect.

Analysis of the binding results at pH 7.4 shows that there are at least two classes of binding sites. This is supported by studies on α_{s1} -caseins that had been chemically modified to alter the number of ionizing carboxyl and phosphate groups. These suggested that Ca^{2+} ions interacted with ester phosphate groups of serine and threonine and that weaker interactions occurred with the free carboxyl groups of aspartic acid and glutamic acid residues.

The relative order of binding to α_{s1} - and β -caseins in tris-hydrochloric acid buffer, pH 7.4 and I 0.1 at 25°, is $\text{Ca}^{2+} > \text{Ba}^{2+} > \text{Sr}^{2+}$ and that to κ -casein is $\text{Ca}^{2+} > \text{Ba}^{2+} \geq \text{Sr}^{2+}$. Under similar conditions the corresponding order for bovine serum albumin was found to be $\text{Ca}^{2+} > \text{Sr}^{2+} \geq \text{Ba}^{2+}$.

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Measurement of Muscle Protein Turnover by Constant Intravenous Infusion of [^{14}C]Glycine

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Measurement of muscle protein half-life by constant intravenous infusion of [^{14}C]lysine has led us to believe that muscle proteins turnover at a somewhat higher rate than was previously thought (Waterlow & Stephen, 1968). It was considered advisable to compare the results obtained with a non-essential as opposed to an essential amino acid.

Male white rats weighing about 100g. were infused with a solution of [^{14}C]glycine (6 $\mu\text{C}/\text{ml.}$) into the internal jugular vein at a known rate. After 6 or 10hr. each rat was anaesthetized with diethyl ether and samples of blood, liver and skeletal muscle were taken. The tissues were homogenized in 10% (w/v) trichloroacetic acid, after which the protein was centrifuged off and hydrolysed overnight in 6M-hydrochloric acid at 100°. The specific