hydrolysis of dietary proteins has also been

The activity of NAP, DDP IV and γGT was
measured in 3 sites of the small intestine
(duodenum, jejunum and ileum) of 24 piglets
weaned at 21 d of age and slaughtered 5 weeks
later fed 1 of the 3 experimental diets based on
maize or sorghum containing 0.03 or 1.36% of
tannin expressed as catechin (table I). It was
found that the specific activity of all peptidases
increased from the duodenum to the ileum (P <
0.05). Peptidase activity was affected in piglets fed
the sorghum-based diets, but only a significant
decrease (P < 0.01) of γGT was observed. The
activity of alkaline phosphatase decreased linearly
but not significantly. We suggest that tannin, which
induced a decrease in the apparent digestibility of
dietary nitrogen, has an effect on the enterocyte
of the small intestine of the piglet, disturbing the
process of protein hydrolysis and absorption
through the membrane.

Involvement of L-arginine/nitric oxide
pathway in the absorption of calcium in
the rat small intestine. R Schleiffer, M Gallusser, F Raul (INSERM U61, Biologie Cellulaire et Physiopathologie Digestives, 3, avenue Molière, 67200 Strasbourg, France)

Nitric oxide (NO) is produced enzymatically in
vivo from L-arginine. It was originally identified
as the main endothelium-derived relaxant factor
and is now recognized as a second messenger
mediating a variety of biological processes, including
platelet aggregation, neurotransmission and
Pharmacol Rev 43, 109-142]. Recent evidence
indicates that enterocytes also produce NO
[Blachier et al (1991) Biochem Biophys Acta 1092,
304-310]. The aim of this study was to determine
the involvement of the L-arginine/NO pathway in
intestinal calcium absorption.

An inhibitor of NO production (Nω-nitro-L-argi-
nine methyl ester, L-NAME) and sodium nitro-
prusside (SNP), a donor of NO, were perfused in
adult Wistar rats anesthetized with ethyl carbam-
ate. An intestinal segment (duodenum + prox-
imal jejunum) was perfused by both intraluminal
and vascular routes [Scheiffer et al (1993)
Biomed Pharmacother 47, 19-23]. The intralu-
minal solution (NaCl 155 mM + CaCl₂ 1.25 mM)
was perfused at a flow rate of 0.2 m³ min⁻¹. Calcium absorption was quanti-
tated by measuring ⁴⁵Ca appearing in the super-
ior mesenteric vein. The drugs were intra-
venously perfused at a flow rate of 0.1 m³ min⁻¹.
Mesenteric blood flow (MBF) and mean arterial
pressure (MAP) were also measured through-
out the experiment. Perfusion of L-NAME (0.123
μmol min⁻¹) resulted in an increase in MAP (+
17 mmHg) and a decrease in MBF (30%). Cal-
cium absorption was decreased from basal
0.21 ± 0.02 to 0.15 ± 0.01 μmol min⁻¹ kg⁻¹ body
weight within 20 min of L-NAME perfusion.
Inversely, SNP (0.032 μmol min⁻¹) decreased
MAP and increased MBF. An increase (30%) in
calcium absorption was observed within 20 min
of SNP perfusion.

These experiments suggest that the level of a
product of the L-arginine/NO pathway may be
involved in the regulation of calcium absorption
in the rat small intestine.

Is gut permeability affected by age and
soyabean antigenicity in the preruminant
calf? P Branco Pardal 1, JP Lalles 1, F André 2, E Delval 3, R Toullec 1 (1 INRA, Laboratoire du Jeune Ruminant, 65, rue de Saint-Brieuc, 35042 Rennes, Cedex; 2 INSERM, Centre Hospitalier Lyon-Sud, Pierre-Bénite; 3 INRA, Station de Recherche sur la Nutrition des Herbivores, 63122 Saint-
Genès-Champanelle, France)

Various small marker probes such as xylose, Cr-
EDTA and mixtures of oligosaccharides are used
to assess the permeability of the gut in health
and disease, but the actual mechanisms of their
uptake are still unclear. Dual marker tests like
lactulose/mannitol [André et al (1990) Hepato-
Gastroenterol 37 (suppl II), 113-117] rather than
single probes are to be preferred to overcome
extraneous influences, including gastric empty-
ing rate or intestinal transit on marker absorp-
tion. Here, we assessed intestinal permeability
using different markers in veal calves, which were
fed milk replacers differing in protein source and
antigenicity.

Twenty-eight male Holstein calves were
placed in cages and fed various diets from 6
weeks of age until slaughter. Protein milk re-
placers was provided by either skim-milk pow-