

Using the technique of indirect immunofluorescence cytochemistry, the development of structures showing vasoactive intestinal polypeptide-like (VIP-l.i.) and substance P-like (SP-l.i.) immunoreactivity was studied in the gut of the fetal sheep and of new-born lambs. The fetuses were obtained by hysterotomy at known stages of gestation. VIP-l.i. immunoreactivity was first detected at mid-gestation (70 d) in neuronal structures in the myenteric plexus of the oesophagus and the forestomachs. SP-l.i. immunoreactivity was detectable at 50 d of gestation in neuronal structures in the myenteric and submucous plexuses of the forestomachs and abomasum and in the myenteric plexus of the rectum. SP-l.i. immunoreactivity was also seen in open-type endocrine cells in the abomasal epithelium.

Subsequently, VIP-l.i. staining progressively appeared caudally from the oesophagus and later cranially from the rectum. By birth the full adult staining pattern had developed in all regions except the colon. SP-l.i. was found to progress cranially and caudally from the forestomachs and abomasum and also cranially from the rectum and by birth the gut showed staining fully representative of the adult distribution. The SP-reactive endocrine cells appeared progressively along the intestine as the fetus developed and by birth were found predominantly in the small and large intestine with only a few in the abomasum.