

Shedding of the 'capsule' and proteinase activity in the horse embryo

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To establish cellular contact with the endometrium, the horse embryo must first shed a glycoprotein 'capsule' (Betteridge *et al.*, 1982; Flood *et al.*, 1982). To investigate whether this process involves a proteinase system analogous to that found in rabbits (Denker, 1977), the uteri from 5 mares have been used in this pilot study. They were collected at surgery or slaughter on Days 20.5, 21.5 and 28.5 after diagnosed ovulation, or on Day 28 and Day 30 as estimated from conceptus diameters measured by ultrasonography. Native cryostat sections were studied with the highly sensitive histochemical gelatin film test for localization of proteinases using a series of inhibitors for identification of the enzyme (Denker, 1974, 1976, 1977). At Day 20.5, the capsule was still intact and surrounded the conceptus completely; at Day 21.5 it was still well preserved but completeness could not be ascertained since this specimen had collapsed; at Day 28 and after, only minor possible remnants were seen. Proteinase activity was considerable in the embryonic membranes and the adjacent endometrium but was much lower in the conceptus-free horn. Two categories of proteinases could be identified: a proteinase with acid pH optimum (cathepsin-like) in the uterine epithelium and embryonic membranes, with markedly increasing activity towards Day 28; and a proteinase with alkaline pH optimum in portions of the trophoblast at Days 20.5 and 21.5. The possible role of the latter enzyme in dissolution of the capsule requires further study of specimens at Days 21–28.

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