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148. Rabbit uterine proteinases related to implantation

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Embryo implantation appears to involve the action of proteinase as suggested by histochemical studies and by experiments on blockage of implantation by inhibitors. In addition to previous findings on a trypsin-like enzyme which is trophoblast-dependent, low mol. wt. p-nitroanilide (pNA) substrates have given evidence that a complex system of various proteinases is present at implantation sites.

In the rabbit, the late preimplantation-phase endometrium is found to contain remarkable activities of enzymes cleaving succinyl-ala_3-pNA and succ.-ala_2-pro-leu-pNA, substrates for elastase-like enzymes, and succ.-ala_2-pro-phe-pNA, a typical substrate for chymotrypsin-like enzymes. The hydrolytic activities are inhibited by elastatinal, chymostatin and soybean trypsin inhibitor, but not by EDTA and pepstatin. The enzymes were partially isolated from rabbit endometrial tissue by ion exchange chromatography and gel filtration. Mol. wts. were in the range of 30 000. Hydrolysis of pNA substrates by the partially isolated enzyme(s) as well as by crude endometrial homogenates is activated by implantation stage uterine flushings.

The possibility that endometrial proenzymes are activated by embryo-derived activators will be discussed.

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