

VEEN, H.: Preliminary report on effects of kinetin on embryonic growth in vitro of *Capsella* embryos.

Many publications appear about the effects of kinetin on plant processes (MILLER, 1961). At this place the effect of kinetin on the in vitro growth of embryos of *Capsella bursa-pastoris* is communicated. The present work is part of an extensive investigation into the effects of growth substances in general on this kind of growth. We used the experimental procedure introduced by RIJVEN (1952). The basal medium was equal to that published in our previous report (VEEN, 1961).

First of all we tested the activity of kinetin on torpedo-shaped embryos (300 μ -700 μ). Added in high concentrations (10^{-8} - 10^{-6} gr/ml), kinetin inhibits strongly the growth. After a few days already, necrosis of the root-meristem initiates. At lower concentrations (10^{-8} - 10^{-9} gr/ml), kinetin does not affect the growth-rate, but its necrotic action is still present.

Next we tested the effect of kinetin on very small embryos (50μ – 200μ), which grow deficiently or not at all in vitro. It appeared, that the chance of survival of these small embryos is influenced by kinetin favourably (see table).

TABLE

Chance of survival of globular and young heart-shaped embryos. Embryos were cultivated for 120 hours in basal medium with 18% sucrose (control) and in three media to which kinetin was added. In brackets: ratio of embryos grown 10μ and over against total number of embryos.

Initial size	Control	Kinetin		
		10^{-8} gr/ml	$2 \cdot 10^{-9}$ gr/ml	10^{-9} gr/ml
49–99 μ	4.5 % (1/22)	18 % (4/22)	33 % (3/9)	14 % (1/7)
99–149 μ	31.5 % (6/19)	80 % (4/5)	50 % (1/2)	66 % (4/6)
149–199 μ	57 % (4/7)	87.5 % (7/8)	100 % (4/4)	100 % (2/2)

The results show that kinetin increases the chance for small embryos to survive. The globular embryos (60μ), however, develop under the influence of kinetin into abnormal large globular forms, which are built up of cells of the original size. This points to a growth only by cell multiplication. A differentiation of the cotyledons does not appear. Young heart-shaped embryos as well develop into abnormal large forms, without any differentiation of the cotyledons.

In all cases we noticed a necrosis of the root-initials, even in the globular embryos. The action of kinetin on embryo growth, therefore, can be distinguished in:

- 1) a necrosis of the root-meristem in all stages of development.
- 2) an activation of the cell division in globular and young heart-shaped embryos.

Differentiation of the cotyledons is not induced by kinetin.

Botanical Laboratory, State University, Utrecht

REFERENCES

- MILLER, C. O. 1961. *Ann. Rev. of Plant Physiol.* **12**: 395–408
 RIJVEN, A. H. G. C. 1952. *Acta Bot. Neerl.* **1**: 157–200
 VEEN, H. 1961. *Proc. Kon. Ned. Akad. v. Wetensch. Amsterdam*, **C 64**: 79–85