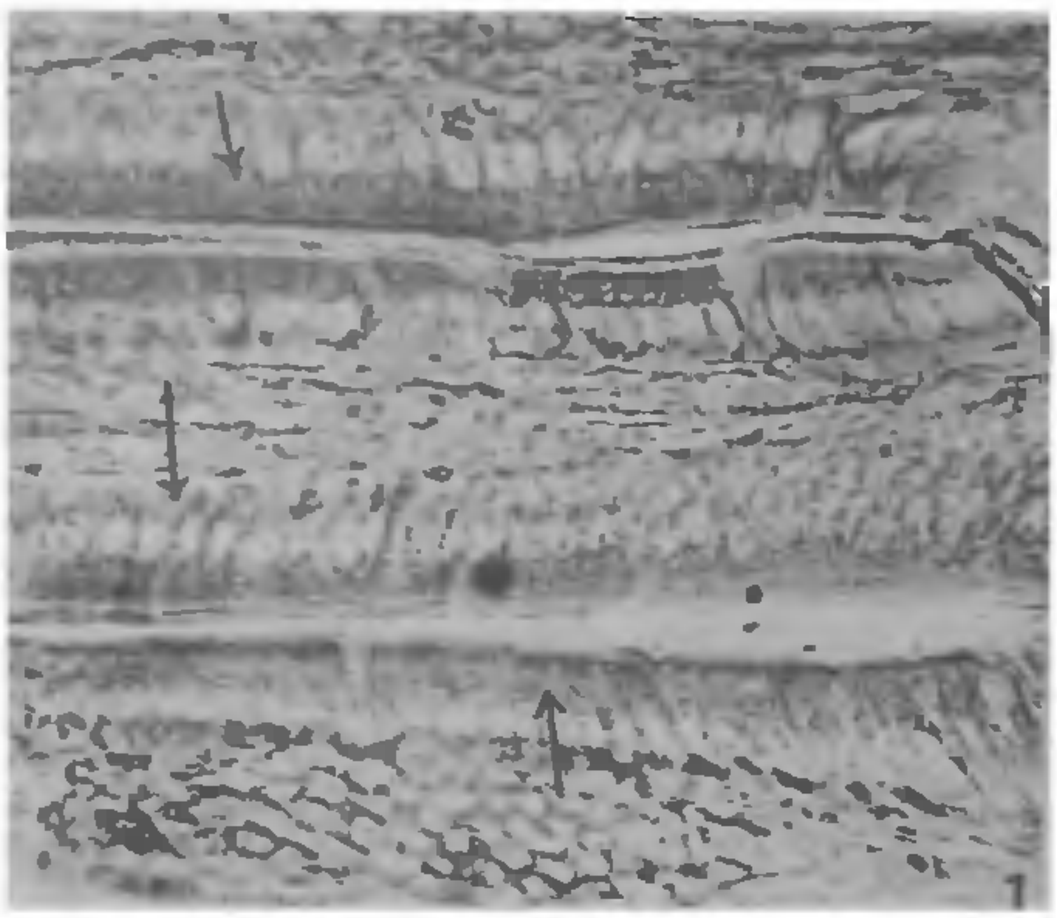

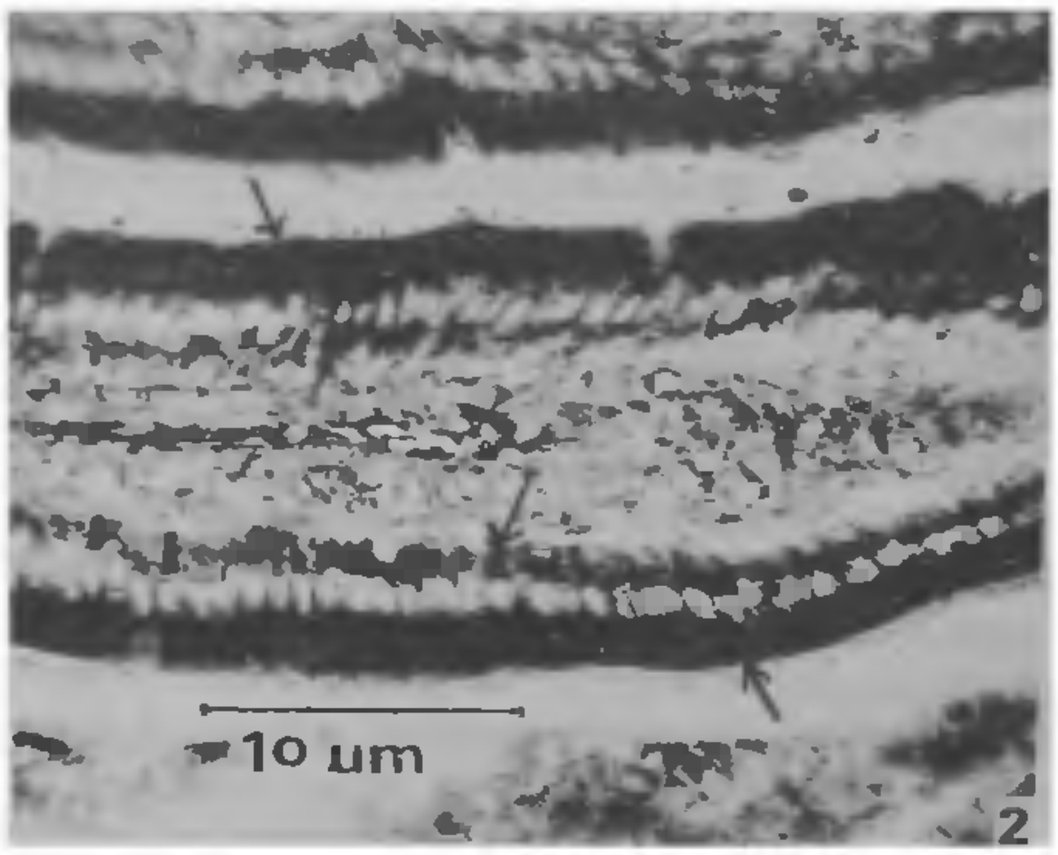

Figures 1 and 2. T. S. jejunum of **1.** Zn-supplement, and **2.** Zn-deficient mice after 3 h of starvation (formal-calcium/SBB).

the causes of low dietary intake in ZD animals — one of the clinical manifestations of Zn deficiency in the animals examined so far. Such an inhibitory mechanism due to the presence of fats in mucosal epithelial cells of jejunum has been well-documented[4,5].

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NEUROSECRETORY CELLS AND VITELLOGENIN SYNTHESIS IN *THIACIDAS POSTICA* (INSECTA: LEPIDOPTERA)

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VITELLOGENINS (VG) are specific female proteins in insects which are synthesized in the fat body, released into the haemolymph and taken up selectively by the maturing oocytes against a concentration gradient[1,2]. Hormonal control of synthesis of VG has been reported in many insects. It is controlled in some insects by juvenile hormone (JH)[1–6], and in others by neurosecretory cells (NSC)[7,8]. VG synthesis can also be stimulated *in vitro*, by methoprene[9,10]. In the mosquito, *Aedes aegypti* an egg development neurohormone (EDNH) produced by the brain may have an indirect role in stimulating the yolk protein synthesis[11,12], while the function of corpus allatum (CA) is to allow the development of previtellogenic oocytes up to the resting stage[13]. The situation in Lepidoptera is not clear. In some lepidopteran insects the CA have been reported non-essential for VG synthesis[14,15], while in others it was essential[16,17]. In the former, the role of NSC has not been examined. The present study was undertaken to investigate the role of CA as well as NSC in the control of VG synthesis in *Thiacidas postica*.

Caterpillars collected from the field were reared in the laboratory at 27 ± 1°C, 70–75% RH and 16 h photoperiod. Larvae were fed on fresh

Ziziphus leaves. Sodium dodecyl sulphate polyacrylamide gel electrophoresis (SDS-PAGE) was performed[18] with 7.5% gels in 0.1 M tris-glycine buffer containing 1% SDS (pH 8.6) at 3 ma/tube. Gels were stained in 0.25% Coomassie Brilliant blue R (Sigma). When the VI instar larva stopped feeding, they were sorted out for decapitation by ligating around the neck with a thin nylon monofilament. To prevent excessive loss of haemolymph, these larvae were decapitated after the formation of pupa with a sharp blade. After treating with phenylthiourea and strepto-penicillin the wound was sealed with molten paraffin wax. Transplantations were performed in 2-day-old pupa. Brain-CC-CA complex was dissected out and CA detached from the CC. After isolating the glands from four animals, they were dissolved in fresh ringer solution and implanted into decapitated pupa. Hormone application involved treatement of the decapitated pupa with 0.25 μg of ZR-515 dissolved in acetone. Hormone was applied topically onto the dorsal surface of the abdomen. Survival of all experimental animals was based upon visible muscular contraction.

SDS-PAGE of the haemolymph of VI instar larva, the early and late pupa, the newly emerged adult male and female, the mature and immature ovary are shown in figure 1. Fractions, numbering 5 and 6, present in the haemolymph of the newly emerged adult female and absent in adult male as well as in the larval and pupal stages represent the VG. To study the endocrine control of VG synthesis, the insects were divided into the following 6 groups and the results are summarized in table 1.

(i) Unoperated control; (ii) Decapitated pupa; (iii) Decapitated pupa injected with ringer; (iv) Decapitated pupa implanted with NSC (brain); (v) Decapitated pupa implanted with CA, and (vi) Decapitated pupa treated with JHA.

Since the VG appear during adult emergence, the haemolymph of the newly emerged adult female

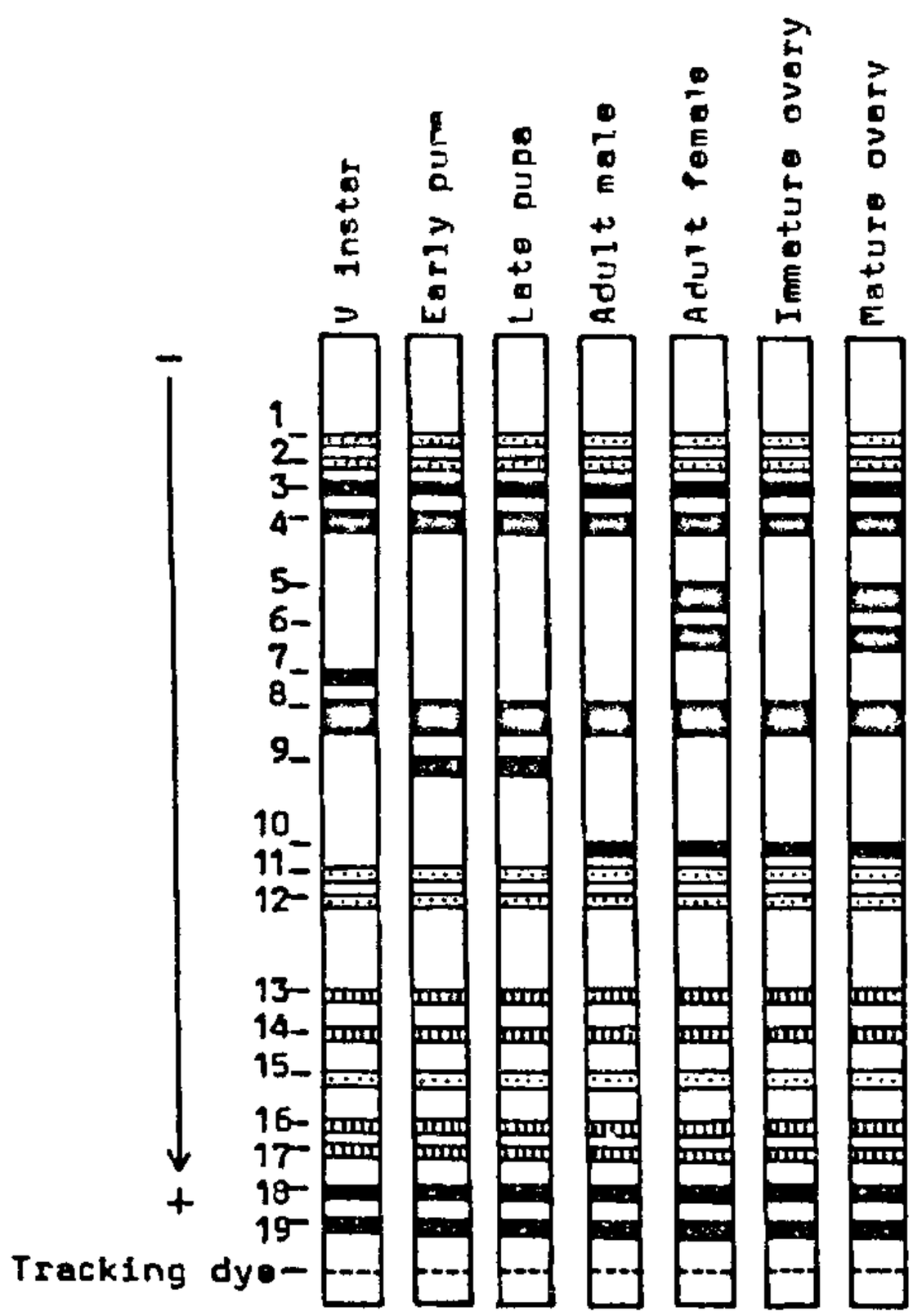

Figure 1. SDS-PAGE of the haemolymph of V instar larva, early and late pupa, adult male and female, and immature and mature ovary.

from the decapitated animals was subjected to SDS-PAGE. In Lepidoptera, two types of results have been reported: (i) CA controlling VG synthesis/egg maturation[16,17] and CA not controlling VG synthesis/egg maturation[14,15]. In the second case the role of NSC does not seem to have been examined. In the present case VG normally appear during adult emergence. The VG fails to appear in decapitated animals but appear in those implanted

Table 1 *Endocrine control of VG synthesis*

Preparation	Treatment	Number of preparations	Presence of VG in the haemolymph
Unoperated control	None	8	+
Decapitation	None	10	–
Decapitation	Ringer injection	10	–
Decapitation	NSC (Brain) implantation	14	+
Decapitation	CA-implantation	10	–
Decapitation	0.25 μg ZR-515 in acetone	8	–

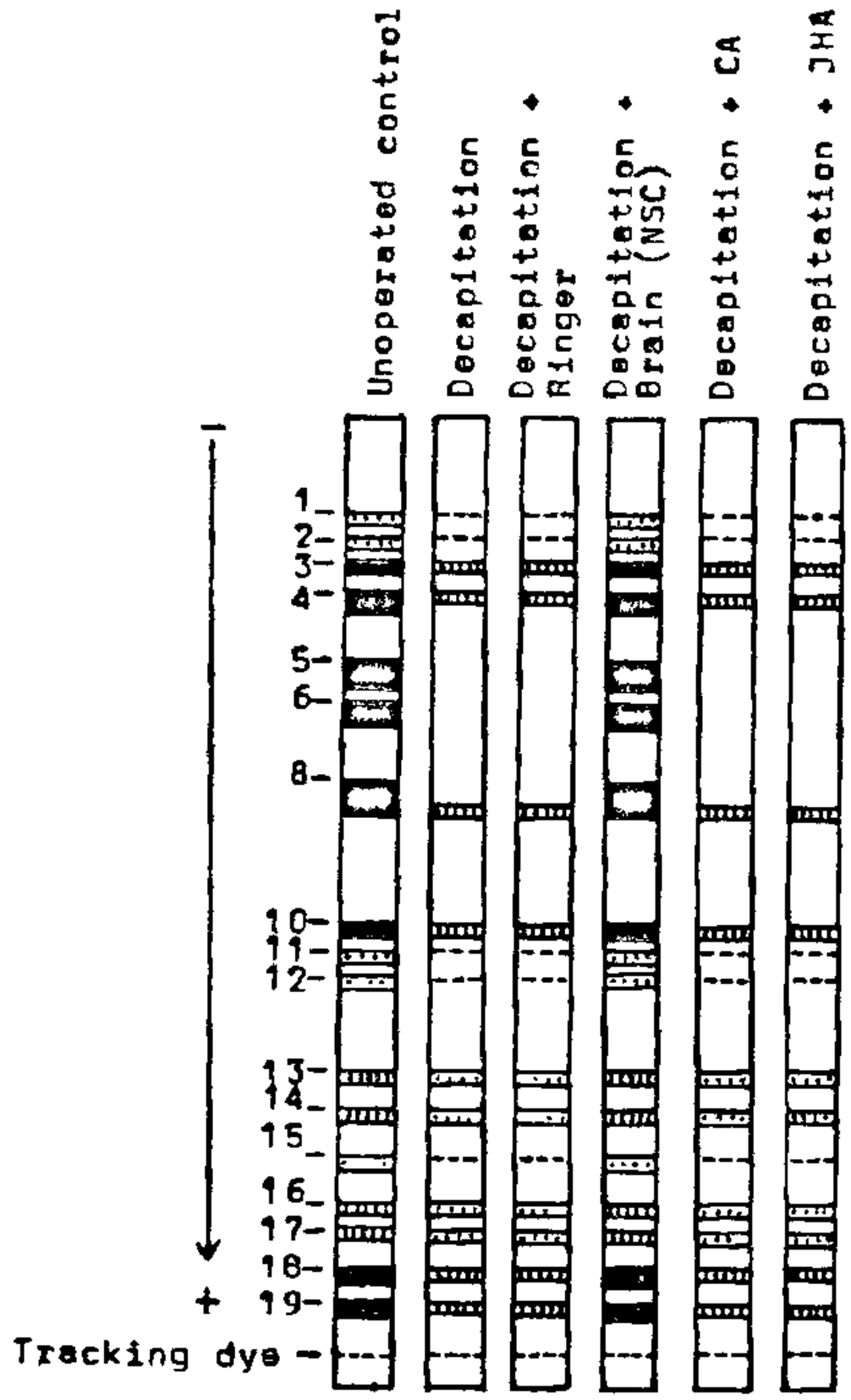

Figure 2. Effect of decapitation and CA and NSC-implantation on VG synthesis.

with NSC (figure 2). On the other hand, implantation of CA or treatment with JHA fails to produce any change in the haemolymph protein pattern. These results indicate that the tissue responsible for VG synthesis in the present insect is NSC and not the CA. Decapitated pupae without any treatment failed to produce VG in the haemolymph (table 1, figure 2). But when such pupae are implanted with NSC, they can synthesize the VG which subsequently appear in the haemolymph. During decapitation a part of CA can remain which could initiate VG synthesis. This possbility is however ruled out because decapitated pupae implanted with CA or treated with JHA failed to show the presence of VG in the haemolymph (figure 2).

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ENCYSTATION OF AXENIC *ENTAMOEBA HISTOLYTICA* AMOEBAE

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CLAIMS have been made regarding encysting axenically growing *Entamoeba histolytica* amoebae. Dobell's[1] encystation of *E. histolytica* growing in bacterial cultures also established the criteria for recognizing encystation if it has taken place. Dobell's description showed that four nucleated cysts of *E. histolytica* also should excyst to yield amoebae lying dormant within the cyst wall. Thus encystation should be followed by excystation to prove that the former had actually taken place and that four nucleated cysts had formed since only these are capable of excystation. A wide variety of factors are known to effect encystation of amoebae[2,3] but their application in encysting *E. histolytica* has not been reported. In the present study encystation of axenically growing *E.*