



## Efficiency of four Bulgarian isolates of entomopathogenic nematodes of genus *Steinernema* (Rhabditida: Steinernematidae) against *Ceratitidis capitata*

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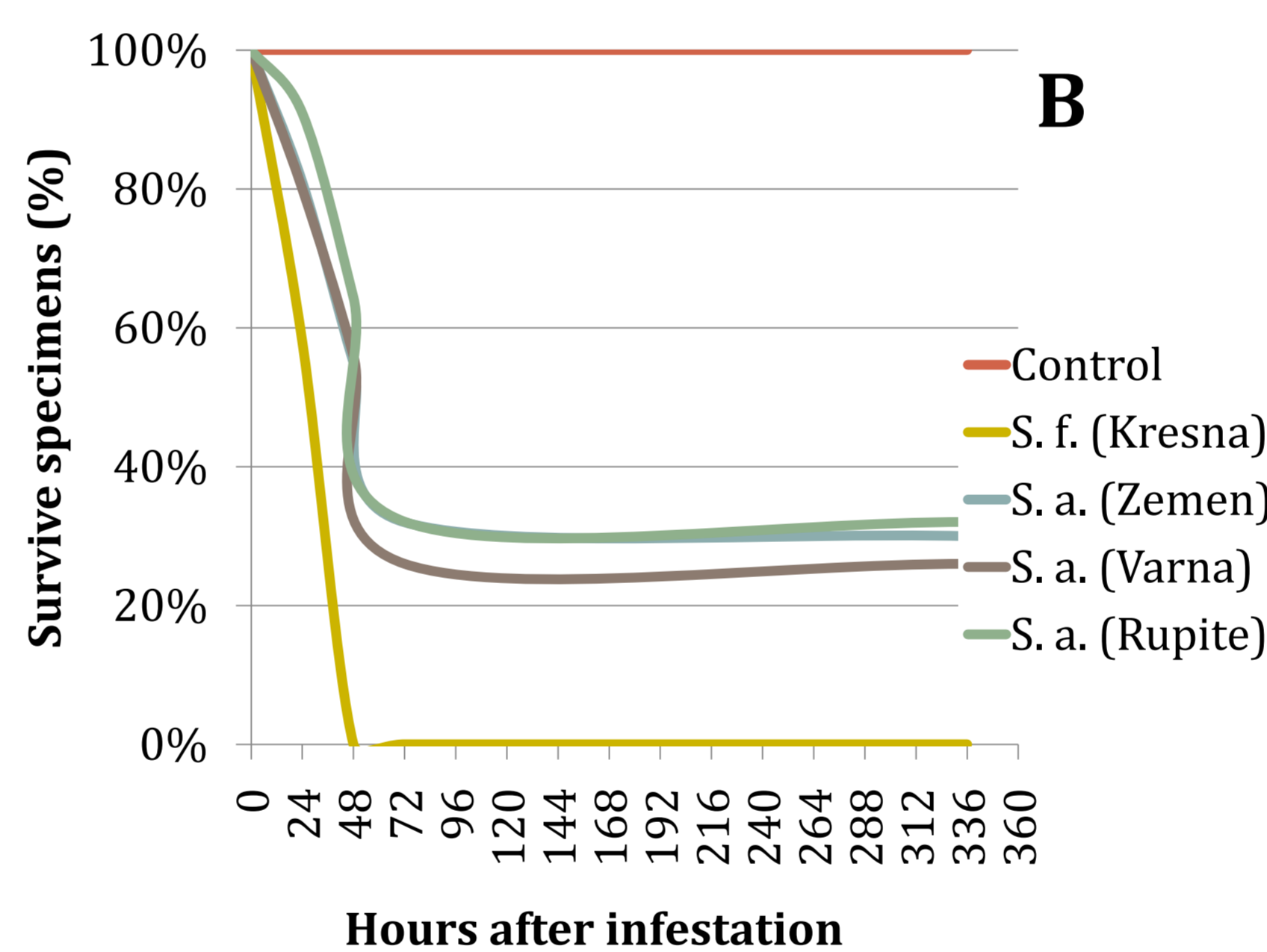
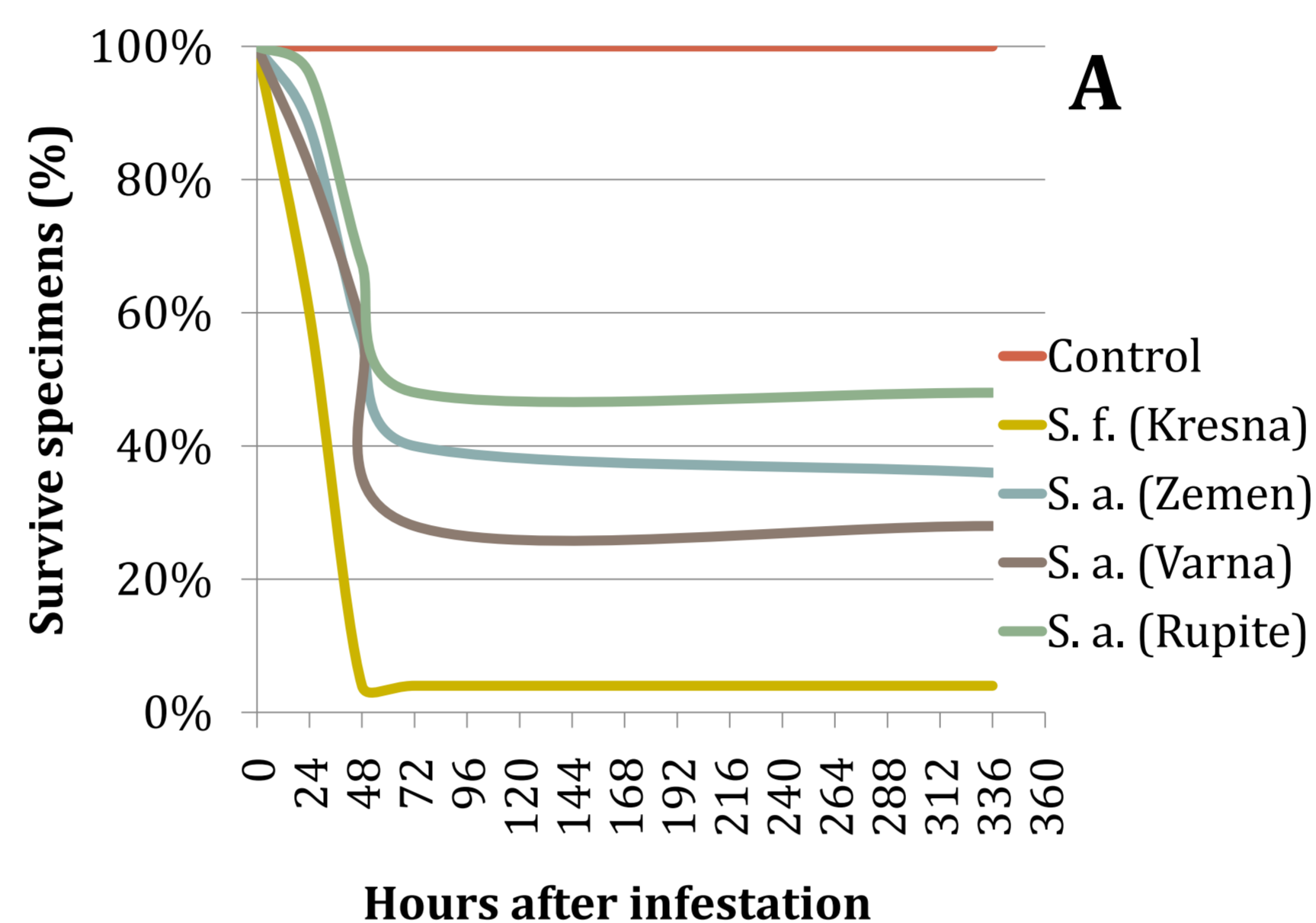
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Entomopathogenic nematodes (EPNs) have their own symbiotic bacteria in their intestine. When they enter insect hosts the released bacteria depress insect immune capacity and protect nematodes and bacteria from cellular and humoral host reaction.

**Material and Methods.** The entomopathogenic nematodes *Steinernema feltiae* (origin Kresna) and three strains of *S. arenarium* (origin Zemen, Rupite and Varna) were evaluated against last larval instar of the Mediterranean fruit fly *Ceratitidis capitata* under laboratory conditions (13% humidity and To 21°C). 50 specimens of IV larval instar of medfly per strain were placed in 2 ml tubes filled with sand infested with 100 and 200 invasive juveniles of EPN and the same number for untreated control. Each specimen was checked on 24, 48 and 72 h and 336 h (14 days) after infestation. Three different types of last instar larvae (Fig. 1a, b and c) and 4 different types of pupae (Fig. 3 a, b, c and d) were observed. All data were analyzed by ANOVA (Statistica 7.0 of StatSoft). If significant effect of the treatment was obtained differences between ranks of variants were checked with a Tukey's test ( $p < 0.05$ ).

**Results.** The strain of *S. feltiae* caused 96% mortality on the 24h and only 16% of them died as prepupae. *S. arenarium* strain "Varna" provided 72% mortality, respectively "Rupite" - 52 % and Zemen 49% (Table 1). Mortality caused by *S. arenarium* strains took place after 48h and more medfly specimens were able to pupate. No one of the nematode isolates was able to infect the medfly pupae of type 5 (Fig. 3 b) within the puparia and all of them managed to go through metamorphosis and form healthy imago. Population from Kresna and Varna are estimated as perspective as potential bioagents.

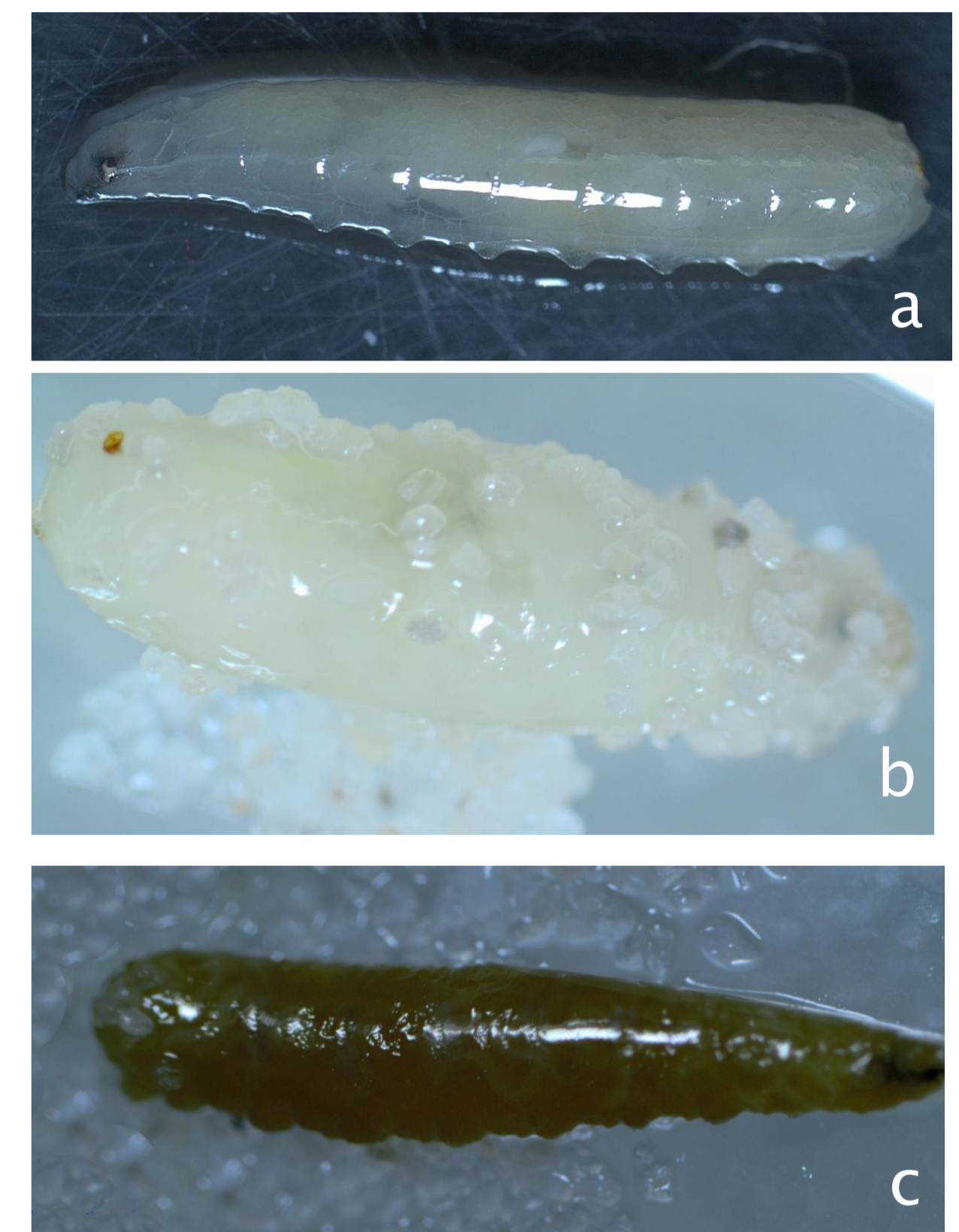


**Figure 2.** Survival of *Ceratitidis capitata* after infestation with four Bulgarian populations of *Steinernema* - A. 100 iL per specimen; B. 200 iL per specimen

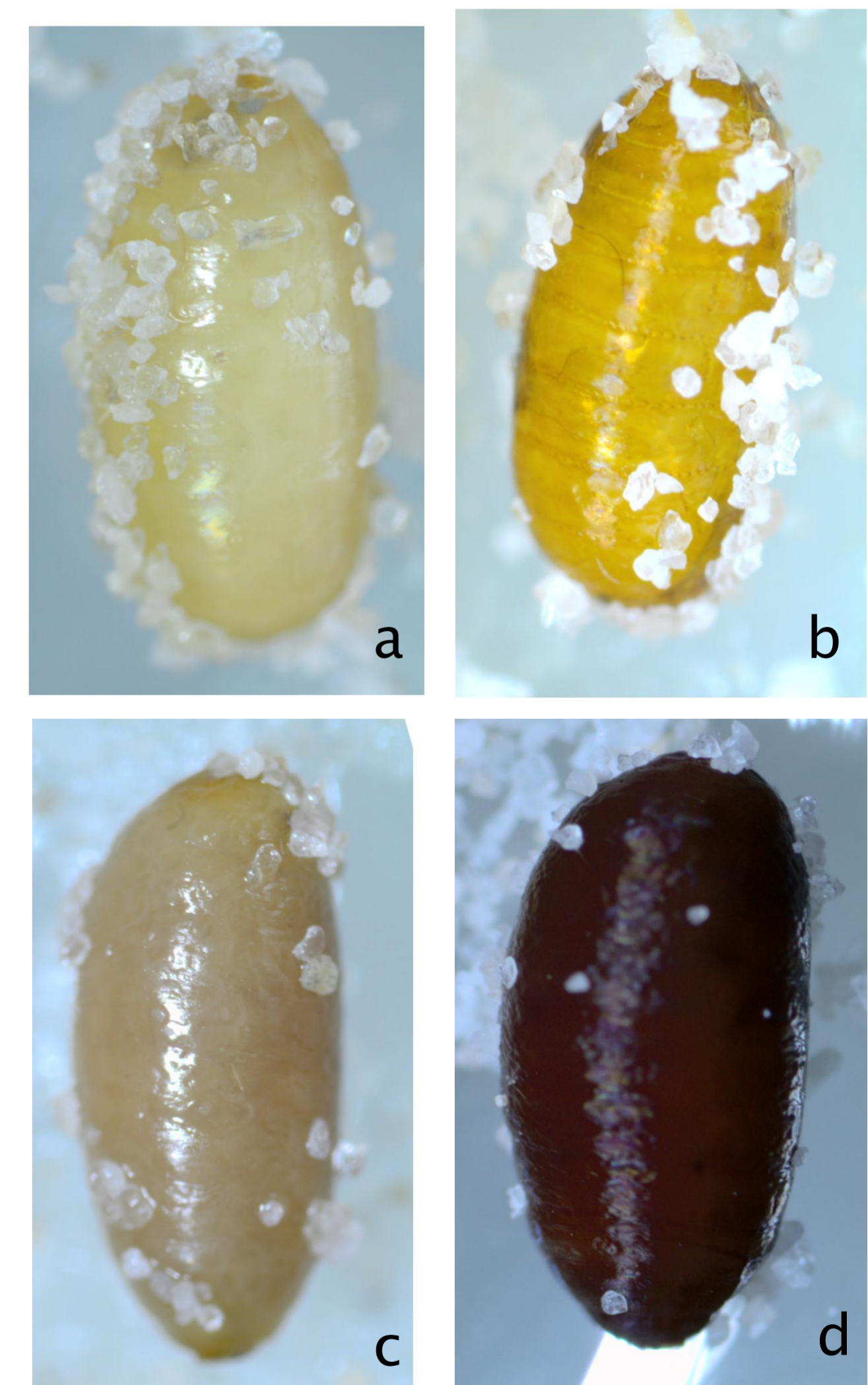
**Table 1.** Effect of infestation with 4 Bulgarian populations of *Steinernema* on *Ceratitidis capitata* based on Abbotts' formula

	100 iL	200 iL
Control		
<i>S. feltiae</i> (Kresna)	96% a	100% a
<i>S. arenarium</i> (Zemen)	64% bc	70% b
<i>S. arenarium</i> (Varna)	72% b	74% b
<i>S. arenarium</i> (Rupite)	52% c	68% b

Numbers followed by different letters are statistically different  $p \leq 0.05$  (Tukey's test).



**Figure 1.** Last instar of *C. capitata* a. healthy specimen; b. infested last instar after 24h; c. infested last instar after 24h till 72h



**Figure 3.** Pupae of *C. capitata* a. and b, healthy; c -infested after 24h till 48 h; d. infested after 48h till 72h

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