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Research Note

A new insect rearing container for *in vivo* mass multiplication of NPV of *Hyblaea puera*

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ABSTRACT: **To overcome the problems in rearing the teak defoliator, *Hyblaea puera* on artificial diet in a two-piece rearing tube for HpNPV mass multiplication, a new three-piece tube was designed and evaluated. The two-piece tube (Tube A) consists of two parts - a cylindrical main body with one end open (55mm x 23mm) and a perforated cap. The three-piece tube (Tube B) consists of a main body with both ends open (55mm x 23mm), a diet cup (20mm x 22mm) and a perforated cap. Comparative evaluation of two types of tubes (main body of Tube A *vs* Diet cup of Tube B) was made in terms of their virus capture efficiency during inoculation and also easiness in diet dispensing and general handling. The short length of the diet cup of tube B favored highest virus capturing (added 30%) and efficient diet dispensing. Tube B could be an excellent option for rearing *H. puera* larvae for NPV mass production and laboratory culture maintenance and also for rearing of other lepidopteran larvae of similar behavior and size.**

KEY WORDS: HpNPV, *Hyblaea puera*, rearing tube

Laboratory rearing of lepidopteran insects becomes a major requisite for various study purposes as well as for mass production of biological control agents including microbial pathogens. Some insects can be maintained in groups and those which are cannibalistic, are maintained individually. Accordingly, designing an appropriate host insect-rearing container becomes an important aspect of any insect-rearing programme. This paper deals with a rearing container designed for rearing the teak defoliator, *Hyblaea puera* (Cramer) (Lepidoptera: Hyblaeidae) in connection with mass multiplication of its biological control agent, the nucleopolyhedrovirus (HpNPV).

For rearing of *H. puera* larvae on artificial diet, glass/polypropylene tubes (80mm x 25mm) with or without cap are used (Nair *et al.*, 1998). The height of such a tubular container always poses difficulty while dispensing the semi solid artificial diet without touching the side of the tube and while removing the fecal material from the tube without disturbing the larva. To overcome the problems met with in using a two-piece rearing tube (referred to as A hereafter), a three-piece rearing tube (referred to as B hereafter) was designed and evaluated. The two-piece tube consists of two parts- main body measuring 55mm in length and 23mm in diameter and a perforated cap (Fig. 1). The three-piece tube consists of a main body with both ends open (55mm

x 23mm), a diet cup (20mm x 22mm) and a perforated cap (Fig. 1). The uniqueness of this tube is the detachable diet cup, which can be fitted into the main body of the tube. The material used for the production of this tube is virgin polypropylene of high grade and hence autaclavable. The transparency of the tube ensures easy observation of the insect growing inside the tube.

Both types of the tube were used in the HpNPV mass multiplication programme. A comparative evaluation of the tubes was made in terms of the quantity of virus received in the tubes (virus capture efficiency) during inoculum dispensing, ease of dispensing diet and general handling. The virus capture efficiency of the two rearing tubes was estimated by carrying out a dummy experiment. The main bodies of Tube A and diet cups of Tube B were stacked vertically in two separate trays (140 containers per tray) and filled with 2.5 ml distilled water each. A known quantity of the virus was then sprayed into tubes/diet cups stacked in trays. Spraying of HpNPV was carried out using a chromatographic sprayer. The sprayer was held 10 to 15cm above and the whole virus was uniformly sprayed into the tubes. After spraying, the water from each set was pipetted out and vortexed well. POBs present in the water were enumerated using

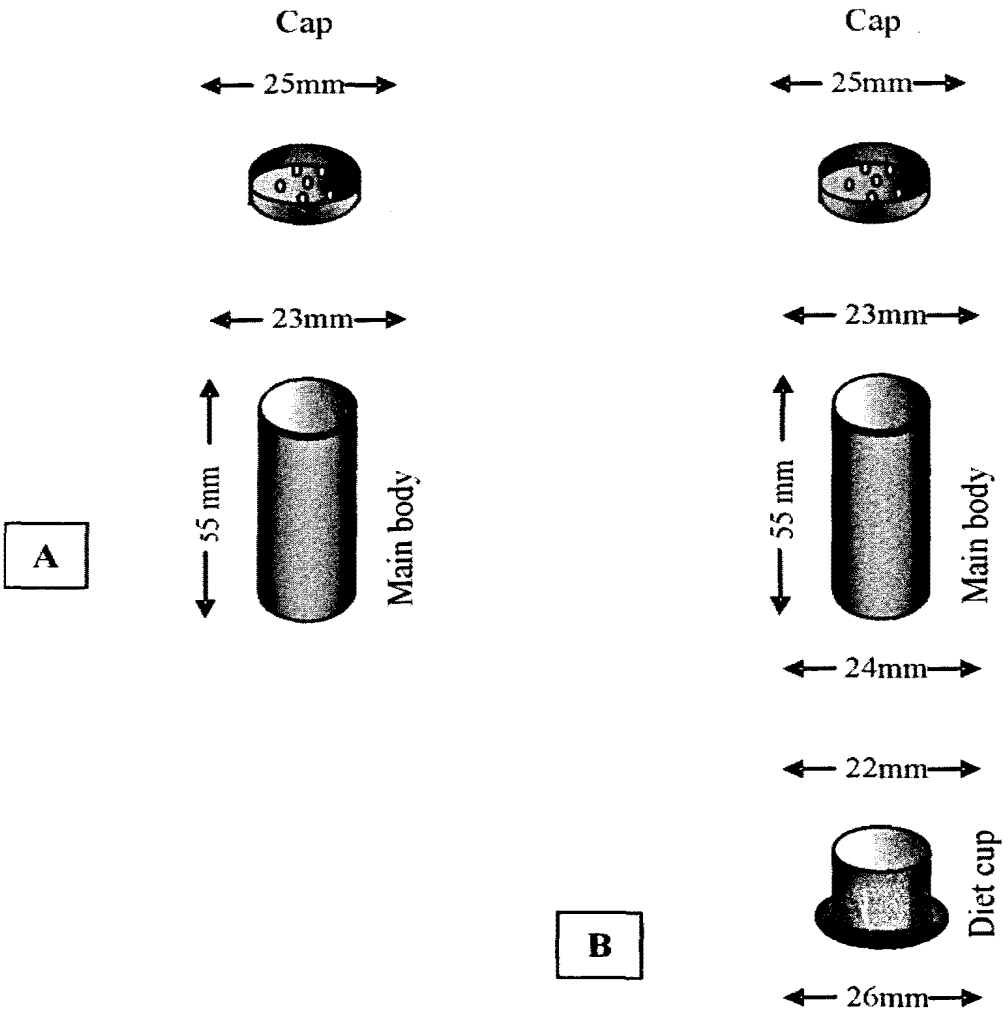

Fig. 1. A-Conventional rearing tube; B- New three piece rearing tube

improved Neubauer's hemocytometer. In the experiment, water was used instead of semi-synthetic diet, so as to get an accurate count of the POBs received in the tubes. The data on capture efficiency of the two types of containers were analyzed for significant variation using LSD. The analyses were performed using a computer specific software package (SPSS for Windows Standard Version 11).

also be changed without disturbing the larva. Above all, being a three-piece tube it is quite easy to remove silken threads and faecal pellets while cleaning. The short height of the diet cup of Tube B also supports an efficient diet dispensing. Thus Tube B could be an excellent option for rearing *H. puera* larvae for NPV mass production as well as for laboratory culture maintenance. The same tube may also be useful for rearing of other lepidopteran

Table 1. Capture efficiency of the two types of rearing tubes

Treatment replicates	Capture efficiency (POBs per tube)	
	Tube A	Tube B
T_1	2.38×10^5	9.2×10^5
T_2	2.48×10^5	8.9×10^5
T_3	2.86×10^5	7.6×10^5
Mean ± S.E.	$2.57 \times 10^5 \pm 14{,}621$	$8.56 \times 10^5 \pm 49{,}103$

Mean values were significantly varying (P = 0.05) by least square difference

The capture efficiency of the rearing containers varied significantly by LSD, P = 0.05 and is presented in Table 1. Out of 1.86×10^6 POBs sprayed on to each diet tube, the diet cup of the Tube B was able to capture 8.56×10^5 POBs as against 2.57×10^5 POBs captured in tube A. The virus capture efficiency was found to be 30 per cent higher in the diet cup of tube B which is attributable to the short length of the diet cup compared to the long bodied tube A.

The added advantage of tube B is that the used diet can be changed and diet cup containing fresh diet can be fixed to the main body without disturbing the larva. Similarly the main body can

larvae of similar behaviour and size.

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