POSSIBILITIES OF MASS PRODUCTION OF THE PARASITOID EXORISTA LARVARUM (L.) (DIPTERA: TACHINIDAE) ON OLIGIDIC DIETS
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Attempts have been made by our research group to rear in vitro 4 tachinid species. Successful results, such as to permit the mass production in artificial media, however, have so far been obtained only for Exorista larvarum, a gregarious larval parasitoid of many lepidoptera. Ease of rearing E. larvarum in vitro may be related to the simple relationship between this parasitoid, which is an idobiont, and its host. Since larvae induce primary intestinal organs respiratory funnels, they may display similar behaviour in the host and in the gelled diet. Testing was mainly carried out using oligidic diets. The complete development of E. larvarum was obtained on different media, the simplest one containing distilled water, yeast extract, chicken egg yolk and saccharose. Rearing techniques were progressively simplified. In particular, plastic multi-well plates, that were originally used as rearing containers, were replaced with glass Petri dishes, in which the larva can be cultured individually, instead of separately.

In the most suitable media, the percentage yields of adults, based on the number of eggs placed on the diet, were similar to those usually obtained in the facultative host Galleria mellonella (L.~50%). In the laboratory, adults obtained in vitro mated, parasitized G. mellonella larvae, and produced a normal second generation. When the above diet was integrated with 5% homogenate of G. mellonella larvae, the puparia weighed considerably more than those usually obtained in vivo. For this reason, as well as to secure a sort of "biochemical bridge" between the two symbionts, we think that it may be better to completely eliminate host material from the artificial medium. At the moment, however, the host has to be necessarily reared in order to obtain E. larvarum macrotype eggs to be transferred onto the diet. In fact, oviposition by the adult onto artificial substrates has not yet been obtained.

IN VITRO REARING OF HOUSE FLY PARASITOIDS (HYMENOPTERA: PTEROMALIDAE)
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In vitro rearing of pteromalid wasps (Muscidiurarae raptor, Spalangia endius, Nasonia vitripennis), pupal ecoparasitoids of Musca domestica and other fifth flies, was successful utilizing several diets, with or without insect components.

The three species developed from egg to the adult on media containing insect material, extracted from pupae of either the natural host or the non-host species, Hailothrix viracemos. M. raptor and S. endius attained the adult stage also on diets containing an amount of pupal extract as low as 5% (w/w). Further, M. raptor completed development on diets devoid of insect components, though at lower rates.

The adult parasitoids reared in vitro successfully oviposited on host pupae, producing viable offspring.

While in nature M. raptor is a solitary parasitoid, several larvae successfully developed and reached the adult stage in vitro in the same well.

The results suggest that, at least for M. raptor, no special "host factors" are necessary to support larval growth.

IN VITRO REARING OF APHIDIPUS ERVI HALIDAY (HYMENOPTERA, BRACONIDAE)
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Aphidius ervi Haliday is an endoparasitoid of aphids, with a rather broad host range, which includes several species of economic importance. In vitro rearing of this parasitoid species has been attempted. A simple artificial diet devoid of insect material has been developed by adding to the cell culture medium IPL-41 the following ingredients: fetal bovine serum, bovine albumin and chicken egg yolk. The addition of this latter component stimulated the larval growth from mature embryo to last instar. However, while larval size and developmental time of 1st instars are similar to those registered in vivo, 2nd instars and mature larvae showed a reduced growth. Based on in vivo physiological studies (Pannacchio et al., 1995, Arch. Insect Biochem. Physiol., 30, 351-367), selected host-derived components are being tested in vitro to assess their nutritional value. The oviposition behaviour has also been considered. Physical cues play a fundamental role in eliciting parasitoid oviposition. In fact, a specific artificial colour applied to aphid dummies can stimulate an ovipositional response in 95% of tested females. This information is being used to develop a technical device to obtain parasitoid oviposition on artificial substrates.