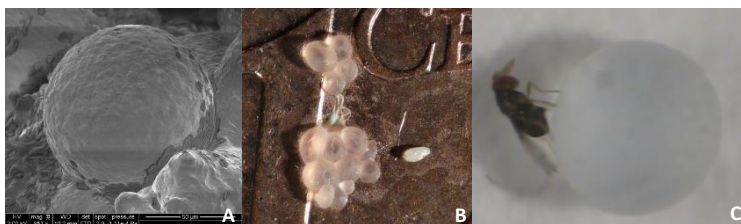


Liquid-tight and gas-permeable chitosan-based capsule

Insect parasitoids are a promising alternative of pesticides in the biological control approach. However, as immature parasitoid develops on or within a pest, mass production is technically complex and hardly affordable to compete with traditional pesticide strategies. Artificial rearing media are being developed with limited success.

DESCRIPTION*

- A capsule made of of:
 - An inner semi-solid particle including e.g. feeding media and volatile components
 - An intercalary film (10 to 50nm) made of polystyrene and beeswax
 - An outer thin chitosan-based membrane (90 to 130nm)
- The one-step method for producing such capsule:
 - With an adjustable diameter (from 20 μ m to 1000 μ m)
 - With an adjustable permeability degree
 - Without limitation toward high-throughput industrial scale production.
- Functionalities including:
 - Gas-permeability: diffusion of volatile compounds
 - Liquid-impermeability even on recurrent perforation, maintaining the inner shell hydrated and sterile
 - Integrity maintenance of capsule and content in various solvents (aqueous, organic, oil, concentrated acid or base solutions, sodium hypochloride) and temperature (60°C)



Pictures of the capsule (A&B); Picture of a parasitoid (C) introducing its stinger inside the capsule.

COMPETITIVE ADVANTAGES

- Simultaneously permeable to gaz and impermeable to liquids
- Simple and cost effective production process
- Capacity to induce oviposition behavior

APPLICATIONS

- Feeding/breeding of arthropods, including insects, arachnids and parasitoids, especially with small perforating apparatus
- Other applications by encapsulating therapeutic, nutritive or cosmetic compounds
- Controlled release of volatile active ingredients

INTELLECTUAL PROPERTY

- Patent in force

DEVELOPMENT STAGE

- Technology validated at lab level



LABORATORY

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