



Study of Tortoise beetle (*Aspidomorpha milliaris*) from eastern region Pune Maharashtra, India

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ABSTRACT:

Tortoise beetle (*Aspidomorpha milliaris*) are found feeding on leaf of *Ipomoea fistulosa*, (*I. carnea* subsp. *fistulosa*), commonly called in Australia as bush morning-glory. *Ipomoea. fistulosa* is among the most dominant and harmful of the weeds that have infested the world's tropical and sub-tropical region. It is toxic to animals and human due to containing poisonous chemicals such as wainsonin and calystegine. However Tortoise beetle (*Aspidomorpha milliaris*) can digest these chemical proteins. It has been already reported that two species of bacteria as *Klebsiella* and *Citrobacter* found in gut that might be responsible for digestion of toxic ipomoea leaves.

Introduction:

Many tortoise beetles have transparent cuticles, the tough but flexible outer covering which gives the insect family (Chrysomelidae) its name protects the delicate creature within. The living tissue is often metallic in color and can in some species even change color. The combination is as varied as it is amazing; many look like tiny robots assembled on leaf. They have the ability to change color. In fact they almost look like ladybugs which have had a lick of gold paint. Yet they have minute valves which control the levels of moisture under their cuticle and so can vary in color, with a envelop of red or black spots. This ability to change appearance led, over the years, to a number of names being given to the same species. Perhaps the most well-known species in America is the Golden Tortoise Beetle (*Charidotella sexpunctata*) which are common on the North American continent. Their favorite food is the Morning Glory, the flower which unravels in to bloom in the morning and curls up in the evening. *Aspidomorpha milliaris*, commonly known as tortoise beetles, they are from the Chrysomelidae family and are quite fascinating to observe. The body of this tiny insect has an oval shape with flattened sides that give it the appearance as baby turtle, hence the name Tortoise beetle. Keen observation of this small beetle will show that the brightly colored shell covering the wings is so all-embracing that even the head is covered. In some species these beetles will even have spots or stripes on their outer shell, which is why some species are often mistaken for ladybugs. Tortoise beetles can alter color within a short time period, turning from brilliant gold to a dull, spotty reddish color. The gold color also fades after death. The gold color is caused by a thin layer of moisture between

the cuticle and an inner layer of the elytra, it seems that the insect is able to “voluntarily” squeeze this layer, reducing its thickness and eliminate the golden color. At the end of life the bright color on the outer shell diminishes and fades. These tiny beautiful beetles are often used to make jewellery (Mason 1929). Tortoise beetles are herbivores, feeding on and spending their entire lives on plants like sweet potato and closely related plants such as *Ipomoea spp.* especially *Ipomoea carnea*; and bindweed, *Convolvulus spp.* Only plants in the family Convolvulaceae are hosts (Capinera 2001). Both larvae and adults feed on leaves causing distinct round circular holes.

MATERIALS AND METHODS:

Different localities in Western Ghats including Bhimashanlar Forest were surveyed for collection of tortoise beetles and their host plants during the period from June to November in 2017-2018. Infested *Ipomoea* weeds along with larvae and adults were collected and brought to laboratory for rearing of larvae on their respective hosts in screened wooden cages measuring 8” x 5” x 4”. The material is identified by available literature.



Fig 1: Tortoise beetle (*Aspidomorpha milliaria*) larva and adult feeding up on *Ipomoea carnea*;

RESULTS AND DISCUSSION:

Tortoise Beetles collected and identified with appropriate literature. **Eggs:** The eggs are attached singly to the underside of leaves or on stems, and are white in color. The eggs are oval and flattened. They measure only about 1.5 mm in length and hatch in 5 to 10 days **Larvae:** Larvae are broad and flattened possessing branched spines. Their thoracic legs are short and thick. The color of the larva is yellowish to reddish-brown. Both larvae and adults feed on leaves of *Ipomoea carnea*; a weed fastly growing in India. The tortoise beetles may be used for biological control of *Ipomoea* weed.

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