

First report on red palm weevil (*Rhynchophorus ferrugineus*) as entomophagy from Chhattisgarh, India

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Abstract

In India red palm weevil is one of the serious pest of coconut but the indigenous tribes of Abujmarh, Orcha of Naranpur, Bastar, Dantewada and Sukma districts of Bastar Division of Chhattisgarh consumes grub stage of red palm weevil for their own diet still it is not commercialized. Gond, Muria, Abuj Maria and Halba people popularly called it as Ind pudg in Gondi and Chhind keeda in Halbi dialect. They collect it from dead wild date palms from month of April to June. The grubs are tasty with high nutritional value.

The word 'Entomophagy' is composed of two Greek words i.e. "Entomon" meaning insects and "Phagein" meaning food. Thus, entomophagy refers to the practice of eating insects. Insects are eaten by humans as food for over a thousand years since the time of hunters and gatherers and this practice continues for several years with subsequent civilization. Insects, a traditional food in many parts of the world, are highly nutritious and especially rich in proteins and these represent a potential food and protein source. There is huge entomophagy diversity in India. Over 2100 species of insects are available as food (Fontaneto et al., 2011). The United Nations Food and Agricultural Organization (FAO) report mentioned that the maggots of different edible insects are rich in calcium, potassium, magnesium, zinc, iron, and also in B-vitamins (Fromme, 2002). The insects are also a source of protein, amino acids, vitamins, fats, and trace elements (Alamu et al., 2013). As a side dish, people like to eat de-oiled silkworm pupae meal and red ant chutney (Malakar, 2022). The red palm weevil, *Rhynchophorus ferrugineus* (Olivier) (Coleoptera: Curculionidae) is one of the promising insects with potential in foodstuff application. It is believed that with the advancement of new knowledge and technology, edible insects, specifically RPW larvae, would gain more acceptance globally, expand their market, and serve as a more sustainable alternative to meat (Fernando et al., 2022).

The word Abujmarh means "the unknown hills" in the Gondi language native to the region. Abujmarh is a hilly forest area, spread over 4,000 square kilometres (1,500 sq m) in Chhattisgarh, covering Narayanpur district, Bijapur district and Dantewada district. It is home to indigenous tribes of India, including Gond, Muria, Abuj Maria and Halbas. It was only in 2009 that the Government of Chhattisgarh lifted the restriction on the entry of common people in the area imposed in the early 1980s. Geographically isolated and largely inaccessible, the area continues to show no physical presence of the civil administration (Anonymous, 2010 and Mittal, 2012).

Seasonal availability of edible weevil:

The indigenous tribes of Abujmarh, Orcha of Naranpur, Bastar, Dantewada and Sukma districts of Bastar Division of Chhattisgarh (Fig. 1 and Fig. 2) consumes grub stage of the red palm weevil for their own diet still it is not commercialized. The grub collection is practised during April to June month from wild date palms in the forest.

Cultural practices associated with collection of edible weevil:

The Maria and Muria tribes of Abujmarh, Narayanpur utilises wild date palm mainly for the purpose of sap tapping. They cut the crown region of palm tree for tapping tadi. The wild date tree is fail to producing sap after 4-6 years of tapping practice. The unproductive



Fig.1 Chhattisgarh



Fig. 2 Bastar Division

trees are cut and collect the grubs. Due to cutting for sap tapping attracts the female of red palm weevil for egg laying. In fact this grub is a serious pest of the wild date palm as well as coconut causing damage by feeding internal tissue of the palms.

Mode of insect consumption:

Gond, Muria, Abuj Maria and Halba people popularly called it as ind pudg in Gondi and Chhind keeda in Halbi dialect. Only the grub stage is used to eat by the tribes. The collect grubs, cleaned properly then boil, oil fried, cocked like vegetables and remaining grubs will sundry and stored for future. They also sale the fresh or sun dried grubs in local market in Tongpal area of Sukma district. Both the larval and the pupal stages of *R. ferrugineus* were analyzed for their nutrient composition, protein solubility, mineral, functional and anti-nutritional factors. The pupal stage had higher protein content (32.27%) than the larval stage which had 30.46%. The fat content of the larva was 22.24% while that of the pupa was 19.48%. The ash content was higher in the larva (7.64%) than that in the pupal stage (6.34%) as reported by Abdel et al., 2017. The crude fat, protein and chitin contents were 52.4–60.1%, 18.0–28.5% and 3.8–4.5% (dry weight), respectively. The sago palm weevil larvae were rich in macro- (potassium, phosphorus, magnesium, sodium, and calcium) and micro- (zinc, manganese, iron, and copper) elements (Chinarak et al., 2020).

Conclusion

Edible insects are a sustainable natural food supply with health, economic, and ecological advantages for people all over the world. Insects are the ideal food because of their high protein content, digestibility and combination of minerals, vitamins, lipids, and carbohydrates. Entomophagy is currently, however, a less widespread practice. As food scarcity in India worsens on a daily basis, entomophagy needs to be revalidated and pushed in the near future. The fundamental issue in this scenario is that although locals have a wealth of ethno-entomological knowledge that has been passed down orally from generation to generation, those outside the communities in issue are hardly ever aware of this reservoir of information.

Nutritional fact:

Quantity	100g
Calories	485.44 kcl
Fat	22.82g
Protein	37.57g
Carbohydrate	32.38g
Fiber	0.13g
Water	2.23g

Source: (Abdel et. al, 2017)

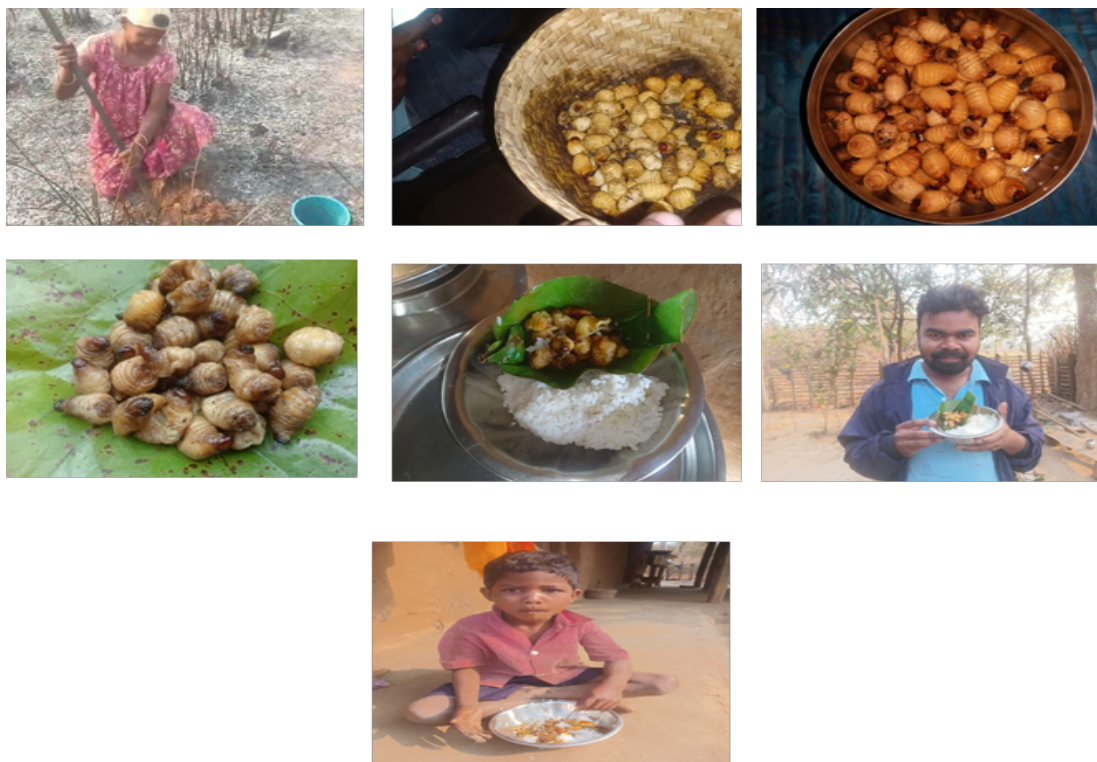
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(a)Collection of grubs of *R. ferrugineus* from dead wild date palm in forest, (b) Collected grubs, (c) Washed and clean grubs, (d) Fried grubs, (f) Serve with rice and (g-h) Eating grubs by tribe.

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