

A supposed delicacy gone wrong: a case report of stink bug meal consumption

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ABSTRACT

A stink bug species, locally called 'Hayhem' or 'Knabu' is consumed as a meal in certain regions in Bhutan. While it is considered a therapeutic food and a delicacy, interviews with some local people reveal that it often causes severe illnesses in some. No published literature has reported any such cases. A case of intoxication following the stink bug consumption in a healthy 35 year old female is reported here. She presented with severe vertigo and recurrent vomiting. Examination revealed no focal neurological deficits and there was no physical evidence of an allergic reaction. Her vital signs were within normal range. Blood investigations revealed minimally deranged kidney function. She was treated symptomatically and was managed for acute kidney injury with intravenous fluids and strict input and output monitoring. She recovered after 5 days. Such intoxication can be treated effectively with just conservative management as demonstrated in this case report.

Keywords: Acute kidney injury; *Coridius nepalensis*; *Coridius chinensis*; Stink bug meals.

INTRODUCTION

Entomophagy refers to human consumption of insects as food. It is common to cultures in most parts of the world. Over 1000 species of insects are known to be eaten in 80% of the world's nations¹. Current estimates of the actual number of insect species on the Earth ranges from 5-30 million². Entomophagy has recently been proposed as a potential solution to fight food shortages and famines. However, food safety is an issue due to risk of allergies and microbial, parasitological and chemical hazards³.

In Bhutan, an insect called 'Hayhem/ Knabu' in local dialects is consumed for its supposed medicinal benefit in curing certain diseases, and its palatability. While its beneficial effects have not been documented by any scientific publications, cases of hospital admissions due to illnesses following the consumption of the bug have been reported in communities where it is commonly eaten. Researches focusing on the food safety aspect of this insect consumption are rare. A case of severe vertigo and recurrent vomiting with acute kidney injury following the consumption of the insect is reported here.

CASE PRESENTATION

A 35 year old housewife presented to the District Hospital complaining of severe vertigo and recurrent vomiting after consumption of the bug meal. The night prior to the day of admission, she had consumed the freshly prepared insects by frying them, in a quantity she had never consumed before. She had not decapitated or discarded any insect part before consuming them. She denied taking any possible stale food that day and had taken the bug meal alone in the evening. None of the other

members of her family took the same meal. She reported that she was healthy otherwise.

About 10 hours later, she developed recurrent vomiting which intensified over time. She also experienced an increasing sense of vertigo which prompted her to visit the hospital. She could not keep her eyes open and had to remain in a lying position. She did not have fever or loose stools.

Examination revealed vital signs within the normal range. Neurological examination was normal except for the presence of photophobia.

Prior to the identification of the insect, acute allergic reaction or poisoning was suspected. She was given an intravenous injection of Dexamethasone 8 mg stat, anti-histamine injection Promethazine 25 mg and an anti-emetic Metoclopramide 10 mg. She was started on intravenous fluids, catheterized and urine output was monitored.

Investigations revealed a minimally elevated Serum Creatinine of 1.6 mg/dL (Reference range: 0.6-1.3 mg/dL) and Blood Urea level of 52 mg/dL (Reference range: 15-45 mg/dL). She was subsequently managed for Acute Kidney Injury (AKI) with intravenous fluids and strict fluid input and output monitoring. The next day, frequency of vomiting decreased, but her giddiness was persistent. She was started on symptomatic treatment with oral Metoclopramide, Promethazine and a course of Amoxicillin.

Intravenous fluids and oral medications were continued until her renal function was normal. She recovered on the fourth day when she was completely asymptomatic. She was discharged on the fifth day with the advice to avoid such meals henceforth and to recheck her renal function after 1 month.

DISCUSSION

Entomophagy is an age old practice in Bhutan. Insects like the Giant Asian hornet (*Bjam bjingyem*), wasp (*Potom*), stink bug (*Hayhem*) and Chinese caterpillar cordyceps sinensis

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(*Yartsa Goenbub*) are consumed for their supposed medicinal properties⁴⁻⁶.

The stink bug shown in Figure 1 is commonly consumed in Zhemgang, Punakha, Wangdi, Sarpang and Tsirang districts in Bhutan. Harvest time is usually in the dry season when the rivers are dry - starts during late October or early November and goes



Figure 1. The bug found in Tsirang

on till January. It is collected during the day time. The bugs are consumed raw, boiled, fried or roasted; usually after beheading and discarding the head or squeezing off the head fluid. Some also de-wing the insect before consuming. The bug is found in river beds and banks, clustered under stones as shown in Figure 2.

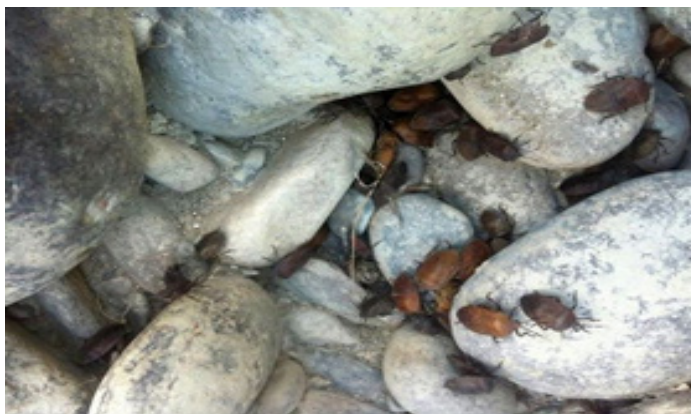


Figure 2. The bugs in its habitat

The color of the ones found in Bhutan varies from dark brown to black. Physical observation shows that its size ranges from 6-13 mm and that it has 2 pairs of wings, which differs slightly in thickness. The back wings are seen to be transparent and thinner than the front wings. Like any other insect, its body is divided into the head, thorax and the abdomen. The insect emits a pungent odor. Personal communication with some villagers reveals that it caused illnesses which rendered patients bed ridden for a week or so, with severe vomiting and giddiness. The villagers said that the illness goes away on its own without any medications, and advise affected patients not to take modern medicines as they believe

this aggravates the symptoms⁷.

Further, they said that in severe cases, affected patients exhibit an altered behavior where they try to squeeze their head into any hole they see, irrespective of the size of the hole. They also maintain that it is the insects that are already dead or those that are ill at the time of collection, which cause the illness. Others believe that it is the red chested bugs that cause the illness and hence the need to segregate such bugs from the harmless ones.

The author could not find any published data on the exact species that is found in Bhutan described by an Entomologist. It could most probably be *Coridius nepalensis* or *Coridius chinensis*. *C. chinensis* is found in China, Bhutan and India and used commonly in China as an aphrodisiacal medicine⁸. Rolston LH et al catalogued *C.nepalensis* to be distributed in Bhutan, Borneo, China, India, Indonesia, Myanmar, Nepal, Sri Lanka and Vietnam⁹.

C.nepalensis, locally known as 'tari' is consumed as a meal in Arunachal Pradesh¹⁰ and has been documented as early as the beginning of the 20th century. 10 related species of *C.nepalensis* has been recorded in India¹¹.

The acute vomiting and giddiness could have been due to consumption of a similar species by misidentification, toxicity due to the chemical contained in the bug or an unsafe method of consumption (collection, transportation, processing). It may also be speculated that the acute kidney injury reported in this case report could be a sequelae of dehydration caused by recurrent vomiting. While the medicinal properties (if any exists) need to be studied, as it may have a therapeutic, commercial and economic value; the illness caused by the insect species needs to be studied in detail. More of such case studies need to be analyzed to completely understand the illness caused. The villagers' belief that modern medicines aggravate the symptoms in intoxication after the bug consumption seems unlikely.

ACKNOWLEDGEMENTS

Author acknowledges the patient for kindly consenting to allow presentation of her case for publication.

Further the author acknowledges the contribution of Mr. Kinley Dorji in helping find relevant resources and Mr. Ugyen Tshering for providing resources, pictures and for the permission to derive literature citations from his published work. The author also acknowledges Dr. Puru Bhandari, Dr. Tika Ram Adhikari, Mr. Kencho Wangdi and Mr. Sangay for their valuable comments.

REFERENCES

1. Carrington D. Insects could be the key to meeting food needs of growing global population [Internet] The Guardian. 2010 Aug 1. [Full Text]

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2. Espirito-Santo M.M. and Fernandes G.W. How many species of gall-inducing insects are there on earth and where are they? *Annals of the Entomological Society of America*. 2007; 100(2): 95-9. [\[Full Text\]](#)
 3. Belluco S, Losasso C, Maggioletti M, Alonzi C, Ricci A, Paoletti M.G. Edible insects: a food security solution or a food safety concern? *Animal frontiers*. 2015 Mar 30;(2):25-30. [\[Full Text\]](#)
 4. Subba MB. Warning against hornet and wasp harvesting [Internet] *Kuensel*; 2014 Nov 17. [\[Full Text\]](#)
 5. Tshering U. When the whole colony is exterminated. *RNR Newsletter*, 2015 Dec; 3(24): 1-3. [\[Full Text\]](#)
 6. Vantomme P. Edible forest insects, an overlooked protein supply. *Unasylva* No. 236 2010/3; (61): 19-21.
 7. Tshering U. Can an in-depth study of river bug reveal many economic and medicinal secrets? *Sanam Drupdrey, Annual Renewable Natural Resource Magazine*. 2015; (5): 69. [\[Full Text\]](#)
 8. Hoffmann W. Insect as Human Food. *Entomological society of Washington*. 1947; 49(9) 236.
 9. L.H. Rolston, D.A. Rider, M.J Murray and R.L Aalbu. Catalog of the Dinidoridae of the world. *Papua New Guinea Journal of Agriculture, Forestry and Fisheries*. 1996; 39(1): 43. [\[Full Text\]](#)
 10. Kato D, Gopi G.V. Ethnozoology of Galo tribe with special reference to edible insects in Arunachal Pradesh. *Indian Journal of Traditional Knowledge*. 2009; 8(1): 81- 3. [\[Full Text\]](#)
 11. Gogoi H, Meth T, Tayeng M. Preliminary survey on insects and spiders from Papumpare and east Kameng District, Arunachal Pradesh with commercial and economic value. *Journal of Bio resources*. 2015; 2 (1): 33-9.