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## Traditional knowledge of cuttlebone in Lakshadweep islands, India

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### Abstract

Cuttlebones are commonly abundant in the beaches and waters of Lakshadweep archipelago and it has specific uses with in the knowledge of rural peoples of Lakshadweep. The study was conducted in March 2019 in Lakshadweep, India. Cuttlebones are physico-chemically unique internal structure of the cuttlefishes belong to the family sepiidae. In worldwide it have variable uses apart from that in Lakshadweep islands it is used for preventing rodents from the houses. Rodents like mice and rats are very common in the islands which threats food storages in the homes. People of the islands used the cuttlebone as preventing these rodents from entering through drainage outlets by placing near the entrance areas. The rural peoples believes that these light weight material from cuttlefish is preventing rodents by affecting something on eyes of the animal or they fear of cuttlebones. The study shows that the different usage of cuttlebone traditionally and the method can be adopt worldwide and further scientific study is needed. The research want to continue because of the unknown prevention factor contained in the physico-chemical character present in the cuttlebone.

**Keywords:** Cuttlebone, traditional usage, rodents, prevention, Lakshadweep

### Introduction

Cuttlebones are the internal shell of cuttlefishes belong to family sepiidae in cephalopoda. Cuttlebone signifies a special class of ultra-light weight cellular natural material possessing unique chemical mechanical and structural properties <sup>[1]</sup>. The microstructure of cuttlebone possesses the multifunctional properties of high porosity, high flexural stiffness and compressive strength, which provides us with a fine example of design optimization of cellular structures created by nature <sup>[2]</sup>. The cuttlebone is spatially distributed world widely in continental shores and oceanic islands. The union territory of Lakshadweep situated in Arabian Sea between 8° - 13° latitude and 71° - 74° longitude and a distance of 200 km to 400 km from Kerala, comprises of 36 islands from that 11 inhabited islands and remaining are small islands, reefs and submerged sandbanks. Lakshadweep is very small but unique biodiversity with complex specialized habitats includes coral reefs, lagoon, sea grass and sandy beach ecosystems. The entire islands are wet-land region. Here the cuttlefishes are highly abundant so the cuttlebones also. Cuttlebones beside the seashore is a regular and common scenery there. And the vernacular name of cuttlebone is 'Kannapotti'. It have different uses in different regions of the world including gold smiths used as polishing powder, powder used in toothpastes, used as antacid for medicinal purposes, it is used for artistic works and jewellery making. It have the ability to withstand high temperature so it is used for mould making in jewellery. Cuttlebone is calcium rich dietary supplement for birds, hermit crabs, reptiles, shrimp etc. Also cuttlebone was proved to be a biomass for new reinforcing filler for natural rubber <sup>[3]</sup>. But in Lakshadweep it have a highly different unique purpose which is used for prevention of rodents from homes to avoid spoilage of food and other materials. The islands are common with rodents like mice and rats, these are always trying to enter the houses through drainage outlets of bathrooms and other small holes. So the peoples of Lakshadweep places or fixes the cuttlebones near drainage outlets. These cuttlebones are easily available from sea shores. The peoples believes that the rodents eyes got affected badly by cuttlebone, some are believes the rodents fear of cuttlebone. But these are only mythical believes and not scientifically proven. But the method is really working by disturbing the rodents. It is successful technique to avoid or prevent rodents and the Lakshadweep peoples practicing the method for so many years.

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The method working may be due to any chemical component or any unknown factor present on it which disturb rats. This kind of method not present in any of the region in the world and strange mechanism. The cuttlefish *Sepia officinalis* is mostly abundant in Lakshadweep waters and fisher folks maintains good fishery on it. High occurrence of cuttlebones near beaches due to remaining parts after predation by marine predators. So it is naturally available.

industries etc. And these chemicals are highly dangerous to the environment, and threaten the biodiversity. But the method done using cuttlebone is natural and environment friendly. These fascinating and simple method may be helpful for so many industries and homes in urban and rural areas. It can be simply used in the areas where rodents threatened the food and materials. The method help to reduce chemicals and synthetics from the environment.

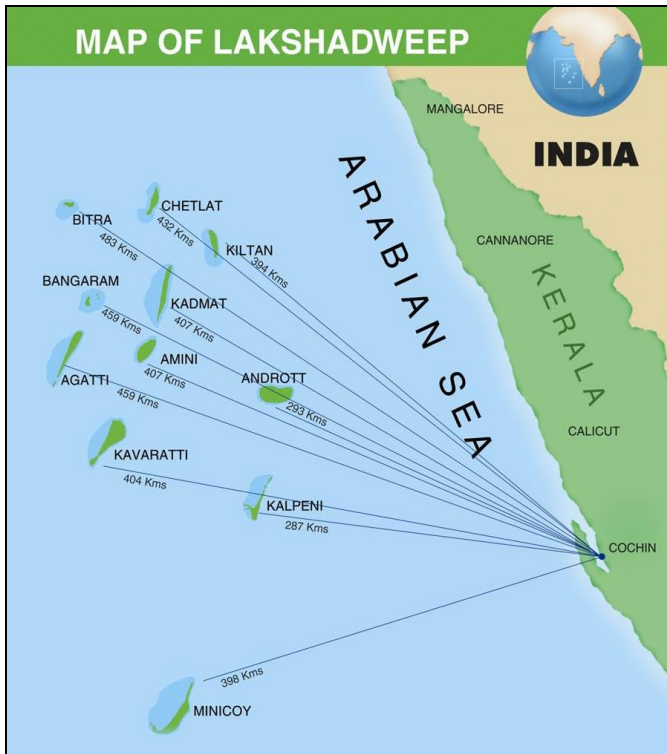


Fig 1: Map of Lakshadweep

**Materials and Methods**

Cuttlebones are collected from the seashores of selected inhabited islands of Lakshadweep. The specimen collected islands are Androth, Agatti, Amini (Fig. 3), Kadmat (Fig. 2), Kavaratti and Minicoy. The cuttlebones are collected from intertidal zones of these islands by direct handpicking. And the specimen were observed and placed near drainage outlets and food storage areas of houses in the islands. Which is done for to study the rodent’s behaviour in connection with cuttlebones. The experiment done one month continuously in March 2019 and also information collected from fisher folks and peoples of the islands directly.

**Results and Discussion**

The study shows that cuttlebones prevents the entrance of rodents to the houses and food storage areas. The continuous observation and information got from rural peoples who were done this method for years, which results cuttlebones disturbs the mice, rats like rodents and this is due to some unknown factors which is not yet studied. The cuttlebone is highly abundant in the seashores of the islands due to wide distribution of cuttlefishes in the Arabian Sea, mostly of *sepia officinalis*. The numbers of cuttlebone got from the islands shows that higher numbers in Kadmat and Amini islands of Lakshadweep. So the significant usage of the cuttlebones in this place is real and practicable. They used the shell for only to prevent rodents and no any other purposes.

Now a days chemical form of rodenticides are used in so many industries like agriculture, feed production, food



Fig 2: cuttlebone – dorsal view, found from Kadmat Island



Fig 3: cuttlebone – ventral view, found from Kadmat Island



Fig. 4: cuttlebone - collected from Amini Island

**Conclusion**

The light weighted gas filled shell composed primarily of aragonite which is the internal shell of cephalopod family

sepiidae called as cuttlebone are abundant in the union territory of Lakshadweep, India. There the rural peoples used the cuttlebone for preventing rodents for so many years. And this unique method can be widespread by this study. Further researches are needed because still there is no scientific evidences of which property of cuttlebone is preventing the rodents. Improved studies would help in finding out the special characteristic of cuttlebone and which can be applicable for the concerned fields.

#### **Acknowledgement**

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