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CHEMICAL CONTENT IN THE SEMBEQ TRADITIONAL RITUALS OF THE LOMBOK COMMUNITY

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Abstract: This study aims to identify and describe the chemical content in the sembeq traditional rituals, especially in the medicinal purpose of the Lombok community. Qualitative approach research with a phenomenological approach is used in focusing on data collecting of the Sembeq tradition. Data on indigenous knowledge of the community was obtained through interviews with Belians, who were the key informants. Data in the form of narration were analyzed descriptively. The results showed that in the Sembeq tradition, which is used for medicinal purposes, the main ingredients are betel leaf, areca nut, and fine lime. Chemical content relevant to the sembeq tradition includes secondary metabolites, mixtures, chemical reactions, bases, solution pH, and surface area.

Keywords: *Sembeq, chemical, indigenous, metabolite secondary*

INTRODUCTION

The island of Lombok cannot be taken from beliefs and traditions that are considered to have religious values, mutual respect, and hospitality, which are unique characteristics of people's lives with socio-religious traits [1]. Sembeq is an unwritten tradition passed down from generation to generation and is still believed and valid in some Lombok people. Sembeq is a symbolic tradition of the Lombok people that has a deep meaning [2] and, in practice, is accompanied by prayer or mantra pronounce certain people can only perform that.

Although sembeq was initially used for medicinal purposes made by a belian/traditional healer, sembeq became expanded in various traditional Lombok rituals such as pedaq api rituals, peresean, bau nyale, weddings, and reception for welcoming traditional guests.

The Sembeq tradition includes a complex of knowledge, belief, art, morals, law, and everything that is a habit of society. Cultural characteristics in ethnoscience include values, attitudes, and knowledge which are important elements in developing student character. It is what lies behind the development of an ethnoscience approach in the learning process [3], and to increase the relevance of science learning, a breakthrough in curriculum and pedagogy is needed besides learning science theory and facts

Ethnoscience integration in learning, especially chemistry, in the classroom and the laboratory, is still not widely done [4]. Difficulty in identifying relevant chemical concepts in ethnoscience is a problem faced by many teachers. Identification of the chemical content of the Sembeq tradition will be beneficial for realizing meaningful learning because this tradition has been embedded in the daily life of the Lombok people. This study aims to identify and describe the chemical content in the Sembeq traditional ritual of the Lombok community. The research results are expected to contribute to the development of ethnoscience-based chemistry teaching materials that can be used in learning in schools.

RESEARCH METHODS

This study uses a qualitative method with a phenomenological approach. In general, qualitative research uses descriptive data in the form of words or expressions, including actions [5] observed in the Sembeq tradition in Lombok society. Data on the symbolic meaning of the sembeq tradition were obtained through interviews with key informants, namely Belian that experts in performing the sembeq ritual. The data were analyzed qualitatively through the stages of data reduction, data presentation in narrative form, and concluding [6].

RESULTS AND DISCUSSION

Sembeq Tradition

The sembeq tradition is a heritage to the community from generation to generation from their ancestors. Initially, sembeq was used for medicinal purposes, usually used to cure headaches and fever, but what developed in the sembeq community was also used in other traditional rituals. A similar opinion was expressed by Iptika [7] that people believe that betel nut can strengthen teeth, eliminate bad breath, and cure toothache and nourish the body. It happens because the hydrolysis of lime on arecoline produces arcaidine, which is a central nervous stimulant. When mixed with betel leaf, it can produce mild euphoria, which gives addictive properties and a sense of pleasure when chewed.

The sembeq process is closely related to mamaq activities, namely nginang or betel nut activities such as Javanese tradition, but there are slight differences between the two. Sembeq is practiced using prayers or mantras, so sembeq can

only be done by certain people with special abilities such as belian or traditional healers. While mamaq activities can be done by anyone and are believed to cure canker sores, relieve toothache and strengthen teeth.

The sembeq tradition with the aim of treatment is carried out through the preparation, implementation, and closing ceremony stages. The preparatory stage is begun by the patient's family to be treated the *andang-andang* to be brought to the belian's house as a condition for carrying out the ritual. Andang-andang generally contains the main ingredients for sembeq, rice, and volunteer money. The implementation stage begins with Belian preparing offerings that have been brought by the patient, followed by making sembeq, with the main ingredients being betel leaf, areca nut, and fine lime. The betel used is green betel with the condition that the sketch of the leaf part must meet between one side and the other. But this also depends on the disease to be treated. Next, Belian chews/memamaq a mixture of betel, areca nut, and fine lime while saying a prayer or a mantra. Commonly used tools such as mortar. After everything is prepared to smooth the mixture instead of chewing. The ingredients are given to the patient's family and explain how to use it, namely by rubbing the sembeq mixture on the sick part of the patient, for example, on the head for headaches. The closing stage is when Belian has finished sembeq ceremony, and the patient's family can leave the Belian house.

The sembeq ritual process consists of a series of actions carried out from preparation to closing stage. It is in accordance with the opinion of Koentjaraningrat [8] as well as Purba and Pasaribu [9] that rituals are a series of actions arranged by the prevailing customs in society to fulfill the needs of teachings or cultural and spiritual values that have been passed down from generation to generation from their ancestors.

Chemical Content in the Sembeq tradition

Identification of chemical content in the sembeq tradition is focused on the main ingredients, namely betel, areca nut, and lime, while the process used in sembeq is the chewing process, mixing betel, areca nut, and fine lime.

Betel (*Piper betel)*

The use of betel in the context of ethnoscience (original knowledge of the community) is believed to strengthen teeth, relieve toothache, cure canker sores and reduce fever [10]. This original knowledge of the community is in line with the results of research that proves that betel has broad bioactivity, such as activity as antimicrobial [11], antioxidant [12], anti-inflammatory and analgesic [13], anti-cancer, anti-cholesterol, analgesic, immunomodulatory and hepatoprotective [13] [14]

The broad spectrum of bioactivity of betel nut is directly or indirectly related to the content of secondary metabolites. Prakash et al. [15] found as many as 32 compounds that have been identified from betel leaf, and the main compounds they contain are eugenol and acetyleuge-nol. Eugenol functions as an anti-alphatoxin, phenolic is widely associated with antioxidant activity [16]. Thus, the chemical content relevant to the use of betel in the sembeq tradition is organic compounds, especially secondary metabolites**.**

Areca nut (*Areca catechu***)**

The ethnoscience context of areca nut in the sembeq tradition is intended to give red color and a spicy taste used for treatment. Several studies have reported the bioactivity of Areca catechu, such as antimicrobial [17], anti-inflammatory [18], and anti-migraine [19]. This bioactivity results from secondary metabolites in areca nuts such as alkaloids, flavonoids, tannins, saponins, and polyphenols. Thus the chemical content that can be identified from areca nut is secondary metabolite compounds.

Fine lime

The ethnoscience context of whiting used in the sembeq tradition has benefits for periodontal tissue health. Fine lime is made by heating or burning limestone (calcium carbonate, $CaCO_3$), which is then cooled with the addition of water to produce whiting (calcium oxide, CaO) and gas (carbon dioxide, CO_2). Betel lime or CaO is a reactive material with water and will form $Ca(OH)_2$. Calcium hydroxide, which has a high pH, will cause the oral cavity to be alkaline and produce a type of reactive oxygen in the form of hydroxyl radical (OH•).

This radical can damage the DNA oxidation system of mucosa cells of betel doers and accelerate plaque buildup on their teeth. Chemical contents in whiting or fine lime include base, pH of the solution, and chemical reaction equation.

The process of chewing a mixture of betel, areca nut, and fine lime

The ethnoscience context in the chewing process carried out by Belian aims to smooth the mixture of betel leaf, areca nut, and lime so that it is easy to use for treatment. Chewing betel leaf and areca nut can trigger saliva production, which helps the process of mixing ingredients. Saliva contains various proteins and minerals that are good for maintaining strong teeth and preventing gum disease. Chewing betel nut can produce reddish-brown saliva. This color is due to the presence of tannin and catechin compounds in the sap of the leaves and twigs of the gambier plant and anthocyanins in green betel leaves [20].

Based on this explanation, the chemical content contained in the process of chewing a

mixture of betel, areca nut, and lime includes mixture, chemical reaction, surface area, and secondary metabolite compounds. The existence of a variety of chemical content that can be identified from the sembeq tradition of the Lombok people is expected to help teachers, who find it challenging to integrate culture in learning activities. According to Gondwe & Longnecker [21], combining scientific knowledge in schools with indigenous scientific knowledge in the community encourages students to be more concerned about their surrounding environment. Moreover, according to Ameyaw [22], the integration of local wisdom/indigenous science does not reduce the understanding of scientific concepts but can increase the meaning of these concepts.

CONCLUSION

The Sembeq tradition of the Lombok people, which is used for medicinal purposes, uses the main ingredients of betel leaf, areca nut, and fine lime. Making sembeq is by chewing or smoothing with mortar of a mixture of ingredients carried out by a traditional healer or Belian. The chemical content in the sembeq tradition includes secondary metabolites, mixtures, chemical reactions, bases, pH of the solution, and surface area.

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