

Summary Statement:**Torbangun (*Coleus amboinicus* Lour): A Bataknese Traditional Cuisine Perceived as Lactagogue by Bataknese Lactating Women in Simalungun, North Sumatera, Indonesia**

Rizal Damanik, MRepSc, PhD

Abstract

Torbangun (*Coleus amboinicus* Lour) has been used as a breast milk stimulant (a Lactagogue) by Bataknese people in Indonesia for hundreds of years. However, the traditional use of *torbangun* is not well documented, and scientific evidence is limited to establish *coleus* as a Lactagogue. This Focus Group Discussion (FGD) study was conducted to gather information regarding the practice and cultural beliefs related to the traditional use of *torbangun* as a Lactagogue. The main findings of this investigation were: (1) *torbangun*, which is considered nourishing, is usually given to the mother for one month after giving birth in order to restore her state of balance; (2) in the Bataknese culture, *torbangun* is perceived to serve several purposes which include enhancing breast milk production and acting as a uterine cleansing agent; and (3) the tradition has been practiced for hundreds of years, and its adherence is still strong.

Keywords: *Coleus amboinicus* Lour, *torbangun*, Bataknese Simalungun, traditional cuisine, Indonesia

Received for review June 28, 2008; revised manuscript accepted for publication August 14, 2008.

Rizal Damanik, MRepSc, PhD, is a lecturer at Department of Community Nutrition of IPB University in Bogor Indonesia. He is currently a visiting assistant professor at the Department of Nutrition Sciences of International Islamic University Malaysia in Kuantan Campus Malaysia. At the moment, he is continuing his research on Torbangun leaves either in Indonesia or Malaysia. He has several postgraduate students in both countries conducting his Torbangun study.

Address correspondence to Rizal Damanik, Department of Nutrition Sciences, Kulliyah of Allied Health Sciences, IIUM, Jalan Istana, Bandar Indera Mahkota, 25200, Kuantan, Pahang, Malaysia; e-mail: rizal-damanik@iiu.edu.my.

I would like to thank the participants and facilitators for their important contribution for this study and Prof. John K. Candlish of Department of Basic Health Sciences, KAHS-IIUM, for his helpful comments on early drafts. I am also grateful to anonymous reviewers of this article for their helpful criticisms and suggestions.

Coleus amboinicus Lour (CA) has been used as a breast milk stimulant (a lactagogue) by Bataknese people in Indonesia for hundreds of years. This investigation was conducted to elucidate the traditional usage of CA during the first month of lactation.

J Hum Lact XX(X), XXXX

DOI: 10.1177/0890334408326086

© 2008 Copyright 2006 International Lactation Consultant Association

Beliefs about the effects of food on pregnancy and lactation are widespread among women in traditional societies. These beliefs include the use of various plants to stimulate lactation.¹ Diets during this period are often controlled and managed according to cultural traditions and dietary beliefs as to what is appropriate and inappropriate/taboo at these times. It is a crucial time for women if they wish to maintain their own health and ensure the survival of the newborn.

Bataknese lactating women in Simalungun in the North Sumatera province of Indonesia have traditional beliefs and practices related to the confinement period. Bataknese women who have just given birth must consume a traditional diet of *torbangun* soup during their confinement period.*^{2,3} They believe the *torbangun* soup, which is made from *Coleus amboinicus* Lour (CAL) leaves, can stimulate their milk production. This tradition has been practiced by the Bataknese women for hundreds of years but has not been well

*The confinement period literally means "doing the month," and it varies slightly between societies: 1 month among Chinese⁴ and around 30 to 40 days in Southeast Asian societies.⁵

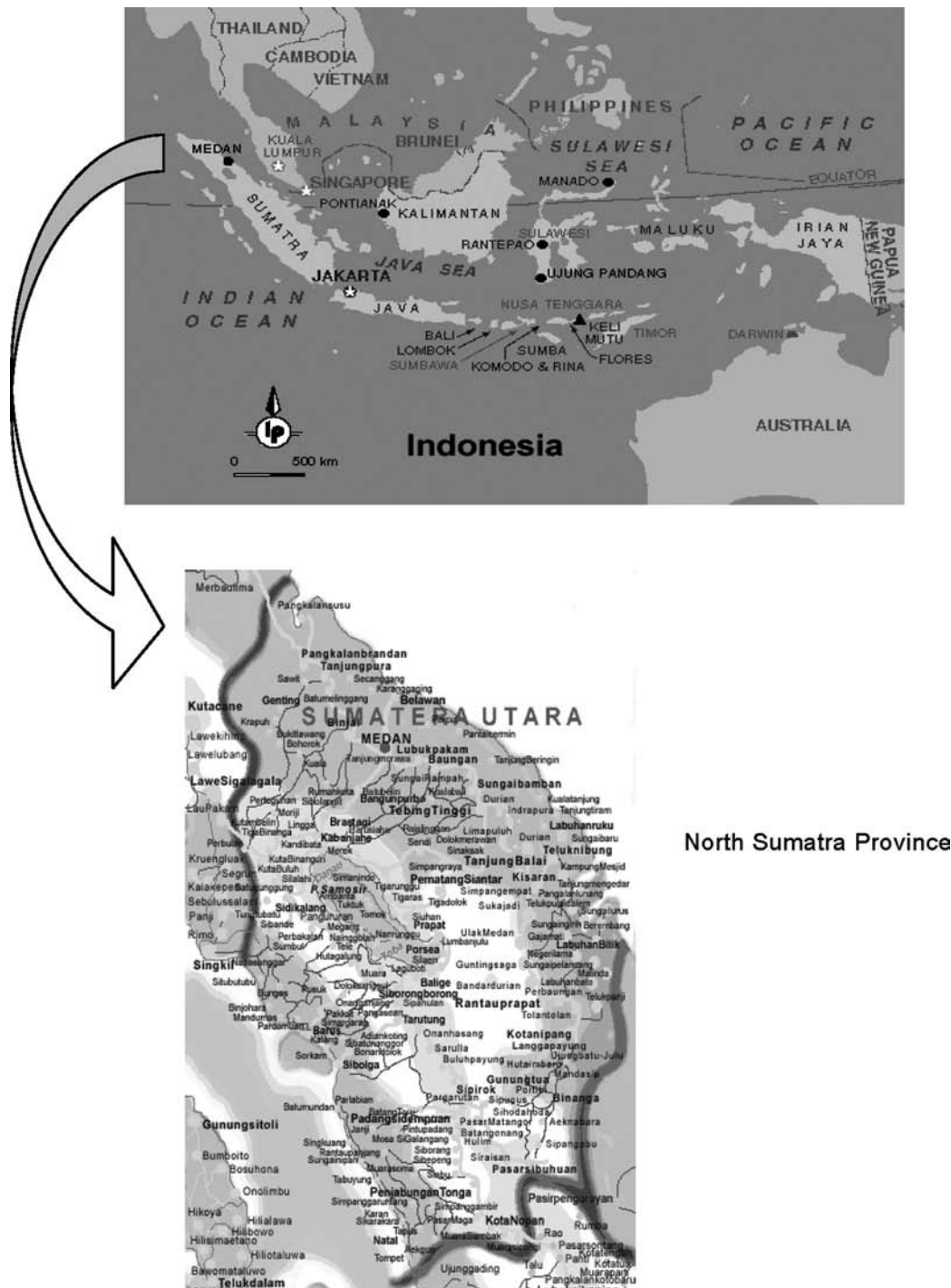


Figure 1. North Sumatra Province, Indonesia.

documented. This article presents data collected from focus group discussions (FGDs) conducted to gather information regarding the practice and cultural beliefs related to consumption of *torbangun* as a lactagogue during the early lactation period.

Method

Study Population

North Sumatra Province, with Medan as its capital city, is one of 32 provinces of Indonesia located on the

mainland of Sumatra and the adjacent islands of Nias and the Batu-Batu chain. The province is located between east longitude 98° to 100° and north longitude 1° to 4° with 717680 km² or 3.7% of Indonesia's entire landmass. It stretches from east to west across Sumatra and surrounded by 162 islands, of which 156 spread along the western coast and 6 on the eastern coast. The special territory of Aceh on the North, West Sumatra and Riau provinces on the south, Indian Ocean on the west, and Straits of Malacca on the east border of this province. It is close to Singapore, Malaysia, and Thailand, adjacent to international shipping lanes (Figure 1).

The FGDs were conducted in 3 villages in the Simalungun District, North Sumatra Province, Indonesia. The 3 villages were (a) Simarimbun, situated about 5 km from Pematang Siantar, the capital city of the Simalungun District; (b) Sidamanik, situated in the coastal region south of the Sidamanik municipality, about 45 km from Pematang Siantar; and (c) Hutabayu situated in the mountainous region in the municipality of Huta Bayu Raja, about 25 km from Pematang Siantar.

Invitations to participate in the FGDs study were disseminated through the village mayors and midwives. Eligible participants were Bataknes women who had experienced breastfeeding, had food-related knowledge of CAL, and had consumed CAL while nursing their infants. As the study aimed to document both the past and the current situation of the use of CAL, 30 grandmothers who were older than 50 years who already had grandchildren, as well as 30 mothers aged between 35 and 50 years who had not had grandchildren, were also recruited. Participants were selected so that the women who had at least 2 children were represented in both groups. It should be noted that although the term *mothers* was used when referring to the group of participants, aged 35 to 50 years, who had not had grandchildren, this term included mothers who gave birth to their second or third baby during the period in which the study was conducted, as well as mothers who had given birth a few years before. This group of women was recruited for the purpose of gaining their insights to current motherhood and childbearing practices in the Simalungun District and any changes in their traditional practices.

The study protocol was presented to and approved by IPB Bogor University Standing Committee for Research on Humans. Additional approval for entry into community was required from the local govern-

ment of the Simalungun District. All participants gave their informed written consent.

Focus Group Discussions

In each of 3 villages, 2 group discussions were conducted separately for the elderly and the recent mothers, so that opinions and experiences from different perspectives could be obtained. The separation was also devised to encourage free discussion since the age and the status of participants in each respective group were relatively equivalent.

The discussions took place in village health centers and/or at midwife practices. A total of 6 group discussions were conducted separately, each with 7 to 13 participants (7-9 for mothers, 11-13 for grandmothers). The discussions concentrated on the cultural perceptions of CAL on breastfeeding. The following issues were explored using a structured questionnaire: general breastfeeding practices among Simalungun women, knowledge about the CAL plant and its use in the past, and experiences using CAL during the lactation period. The results of the FGDs study were validated and updated by cross-checking the information gathered from the elderly mothers with that from the recent mothers and vice versa.

The discussions were conducted either in the Simalungun language or in the Indonesian language by the assigned midwives and were recorded audiovisually. Each discussion lasted for 60 to 90 minutes. Informal interviews with 4 grandmothers who were very old and had consumed CAL while nursing their infants were also conducted to explore the historical explanations of the usage of *torbangun* in the Bataknes tradition. These grandmothers were nominated by participants from the grandmother's group discussion. Observations to several homes of the lactating mother were also conducted to obtain further information on the CAL plant.

Data Collection

The discussions were recorded on videotape and first transcribed by 2 independent bilingual research assistants. A basic content analysis method was used to identify, code, count, and group ideas and themes within and across the conversations. In this method, the translation retains, verbatim, what the women said, with some syntactical corrections. Attention was paid to the words, contexts, frequency, extensiveness, and specificity of

Table 1. Characteristics of the Participants of the FGDs Study

	Mothers (aged 35-50 years)	Grandmothers (aged 51-91 years)
Simarimbun (total n = 20)	n = 8	n = 12
Number of children		
2	1	0
3 or 4	7	4
≥5	0	8
Occupation		
Housewives	1	8
Self-employed	2	2
Casual	1	2
Office-based	4	0
Highest education level		
No formal education	0	8
Elementary school	1	3
High school	7	1
Sidamanik (total n = 20)	n = 9	n = 11
Number of children		
2	1	0
3 or 4	7	4
≥5	1	7
Occupation		
Housewives	1	7
Self-employed	2	3
Casual	2	1
Office-based	4	0
Highest education level		
No formal education	0	6
Elementary school	2	3
High school	7	2
Hutabayu (total n = 20)	n = 7	n = 13
Number of children		
2	1	0
3 or 4	5	4
≥5	1	9
Occupation		
Housewives	0	8
Self-employed	1	2
Casual	2	3
Office-based	4	0
Highest education level		
No formal education	0	8
Elementary school	0	4
High school	7	1

Abbreviation: FGDs, focus group discussions.

responses.⁶ Content analysis was then combined with an ethnographic approach to presenting the data. Quotations from the participants that were thought to best express the main ideas and significant themes were woven into the narrative presented in this article.

Results

Subject Characteristics

Sixty Simalungun women were recruited for the study: 36 were grandmothers, aged 51 to 91 years, and 24

were mothers, aged 35 to 50 years. The characteristics of the participants involved in the FGDs study are presented in Table 1.

The grandmothers tended to have at least 5 children, whereas most of the mothers had only 3 or 4. The majority of the mothers had completed high school, and half of them worked in an office. In contrast, more than 60% of the grandmothers had no formal education and were homemakers taking care of their families.

Knowledge About Torbangun Soup

The Batakese women believed that there were dietary ways in which they could boost the production of their breast milk. Traditionally, Batakese women in Simalungun who have just given birth must include *torbangun* leaves in their diet in order to increase their breast milk production. *Torbangun* leaves cooked in a soup form, either with chicken or catfish, are considered to produce abundant breast milk. *Torbangun* is believed to contain a certain substance, which helps stimulate breast milk production. Thus, *torbangun* soup is consumed soon after giving birth and continued for at least 1 month. One woman stated:

For Batakese women who have just given birth, particularly in the first month, they must consume *torbangun* soup so that they will produce a lot of breast milk. Our ancestors have handed down this tradition for more than hundred years. (Grandmother with 6 children, from Sidamanik)

The practice of consuming *torbangun* soup has been passed on from one generation to the next and continues to be maintained by the Simalungun women. The grandmothers gave their comments about this.

I have 8 children and I always consumed *torbangun* soup after I gave birth. At that time my mother prepared the soup for me. When I asked my mother whether she ate the soup when she gave birth she answered yes. Now I always cook *torbangun* soup for my daughter or daughter-in-law when they give birth. (Grandmother with 8 children, from Huta Bayu)

The mothers' knowledge about the practice of consuming *torbangun* soup was based on their experiences after they had given birth. At that time, their mother and/or their mother-in-law cooked the soup and asked them to consume it.

I remember when my youngest sister was born, my mother ate *torbangun* soup every day. At that time my father and my grandmother cooked the soup for her. My mum said the soup would stimulate her breast milk production. When I delivered my babies my mother cooked the soup for me. (Mother with 4 children, from Sidamanik)

Another remarked:

I stayed at my mother-in-law's house when I had my first child. She always asked me to consume the soup every day. She said that I had to consume the soup so that my breast milk would be abundant. My mother-in-law was correct. I always consume the soup every time I gave birth for all of my children. I have 4 children now. (Mother with 4 children, from Simarimbun)

Meaning of *Torbangun*

Torbangun is a local name among the Bataknese people for the *Coleus amboinicus* Lour plant. In the present study, the grandmothers were asked about the historical background behind its name. According to the grandmothers, *torbangun* leaves have 2 names among the Bataknese people: namely, *bangun-bangun* among the Toba Bataknese and *torbangun/tarbangun* among those from the Simalungun or Karo Bataknese. Despite the differences in name, the benefits of using this plant to increase breast milk production after giving birth and during the breastfeeding period are considered the same for all groups.

For Simalungun people we call this *torbangun*. But for Toba Bataknese people they name this *bangun-bangun*. However, the plants and the function of this plant are the same. It's just a matter of name. (Grandmother with 7 children, from Simarimbun)

Another grandmother remarked:

There is no difference between those 2 names. They are the same. I'm sure all Bataknese people here recognize this plant whether you call it *bangun-bangun* or *torbangun* or *tarbangun*. (Grandmother with 9 children, from Huta Bayu)

Grandmothers gave historical explanations for the name *torbangun* and its meaning, which can be seen from

2 different aspects: linguistic and philosophical points of views. A grandmother in Sidamanik village said,

Torbangun or *tarbangun* is Bataknese Simalungun language. The word "bangun" means "wake up". It means that the leaf has the benefit of lifting the spirit or giving more power/strength to the mother. (Grandmother with 8 children, from Sidamanik)

Another grandmother who was 90 years old and had 15 grandchildren from Huta Bayu explained from a philosophical point of view:

Torbangun portrays that a woman, who has just given birth loses a lot of energy, hence feels worn out. However, she must breastfeed the baby, therefore needs a lot of extra energy. She doesn't only need the energy during the day when she is awake but also during the night when she has to breastfeed. This will go on for months during the breastfeeding period. And for the mother to be able to have the extra energy, she must consume *torbangun* soup. By consuming the soup she will be able to get up and stay awake at night and breastfeed the baby. (Grandmother with 7 children, from Huta Bayu)

The Preparation of *Torbangun* Soup

In Simalungun, *torbangun* is grown in the home garden, usually the home where a mother is to give birth. It is easily cultivated. The husband or the mother and also the mother-in-law usually plant a large amount of *torbangun* in their yard. If they do not have enough space in their home yard, they will plant it in their farm. They plant a large amount of *torbangun* so that the new mother is able to consume the soup for 1 month. They start planting *torbangun* when the woman is about 7 to 8 months pregnant so that they can harvest the leaves when her labor occurs. After the baby is delivered, they will have enough for 1 month. Alternatively, they can buy it from local markets.

I visited and stayed at my children's house when my daughter's pregnancy was 8 months along. During that time I helped them by looking after my grandchildren, cooking and planting the *torbangun* in their yard. (Grandmother with 7 children, from Huta Bayu)

Another grandmother said,

Torbangun is a typical bush plant that is commonly used by the Bataknese. This plant can grow easily, especially when we water it often. It is easy to plant it, using its stem cuttings. (Grandmother with 6 children, from Simarimbun)

Another mother remarked:

My husband and my mother-in-law always plant the *torbangun* in our house yard when I'm going to give birth. It is easy to plant and can grow easily, without fertilizer. They plant it so that there is enough stock for about 1 month (Mother with 4 children, from Sidamanik)

Torbangun is served as soup. The *torbangun* soup is cooked by most of the Bataknese women in Simalungun as follows:

1. 120-150 g of young *torbangun* leaves and their stems (≈ 0.5 -1 cm from the tip) **CLARIFY [SHOULD "AND" BE INSERTED BEFORE "BRANCH"?]** branch are rinsed and cleaned.
2. The leaves are macerated and then squeezed to remove the bitter-tasting water.
3. Coconut milk, a glass of water, and slices of chicken are cooked together in a pot—catfish can be an alternative to sliced chicken. The chicken adds flavor to the soup. Boil until the chicken is cooked.
4. Ingredients such as salt, garlic, brown onion, and curcuma are cooked separately in a pan and added later. The *torbangun* leaves are then added, and the mixture is brought to boil. Lemon juice is added, and the soup is then removed from the heat. The dish is then ready to serve.

According to some grandmothers, there have been some modifications in the preparation method. In more traditional practice, the soup was cooked without adding coconut milk.

Back then, *torbangun* soup was cooked without using coconut milk. After it was roughly squeezed, *torbangun* leaves were cooked with all the ingredients and then ready to serve. (Grandmother with 8 children, from Simarimbun)

In the study, the grandmothers could not give a definite explanation as to why the traditional recipe did not contain the coconut milk. However, all the grandmothers agreed that adding coconut milk into the soup reduces the bitterness, and all the mothers preferred the new soup. The mothers explained that adding coconut milk into the soup improved the taste and reduced the bitter taste.

I always ask my mother to cook the soup with coconut milk. It makes the soup tastier. I couldn't eat the soup cooked without coconut milk. (Mother with 3 children, from Simarimbun)

Another woman related:

I had tried the *torbangun* soup cooked without the coconut milk. I found the taste was very bitter. I don't like the taste. (Mother with 3 children, from Huta Bayu)

Some grandmothers in the study claimed that adding slices of chicken into the soup were not common in the traditional recipe. According to them, catfish, not sliced chicken, was added into the soup and only for 2 to 3 days as a compliment for the women who had just given birth.

Adding slices of chicken to the dish was not common. More often it was catfish. Adding catfish was not compulsory, it was just complement. This would be served only 2-3 days after the women had given birth. We also didn't add coconut milk to the soup. (Grandmother with 6 children, from Sidamanik)

The Current Practice of Torbangun Soup-Making

Simalungun women who had just given birth usually consumed *torbangun* soup 3 times a day at mealtimes. Traditionally, the soup was consumed on the first day when the women gave birth, but later on as more women began delivering at midwives' practices or at *Puskemas* (community health centers), they began consuming it only after they had returned home (2-3 days after they had given birth).

I gave birth at home with the assistance of traditional birth attendance. After my baby delivered, the first food that I ate was the *torbangun* soup. My mother cooked the soup while I was in labor. (Grandmother with 7 children from Simarimbun)

Another grandmother related:

Now is the modern era. Many women give birth not at home like I experienced but at the midwife's practice or at *Puskesmas*. They stay there for 2 to 3 days. So I gave my daughter or my daughter-in-law *torbangun* soup after they came home. The midwife and/or *Puskesmas* don't provide the *torbangun* soup for their patients. (Grandmother with 5 children, from Sidamanik)

According to grandmothers, there are no limitations of quantity and frequency in consuming the soup. Women who have just given birth can consume the soup as much as they want and as long as they want to consume it. Traditionally, women who had just given birth consumed the soup at least 3 times a day at mealtime for 1 month.

There is no restriction in consuming *torbangun* soup either in quantity or frequency. You can eat the soup any time and have as much as you want. You can eat the soup 5 times a day or more than 2 months. It's ok. As long as you can afford it! (Grandmother with 8 children, from Simarimbun)

Another grandmother remarked:

I like the soup very much. I often asked my mother to have another bowl of soup. I ate the soup 3 times a day for 5 weeks. I started to have the soup the day after I delivered. I ate this soup with rice and other dishes that we had during mealtime. (Grandmother with 6 children, from Huta Bayu)

Experiences Consuming Torbangun Soup

In these group discussions, all participants considered the effects of consuming *torbangun* soup during their nursing period to have been beneficial. In general, all women felt that their health was in prime condition. The women felt vigorous and healthy after consuming the soup. Women are encouraged to breastfeed the baby even at night. When asked what the effects were after having consumed the soup, one mother related:

After consuming *torbangun* soup, I felt fit and my tiredness wore off not too long after giving

birth. The soup is good for recovery after giving birth. (Mother with 3 children, from Sidamanik)

Torbangun soup helps to increase breast milk production. The women felt their breasts become full with breast milk after consumption of the soup.

My breast milk production was abundant after consuming *torbangun*. My breast felt full and there were drops of breast milk around my nipples. (Mother with 3 children, from Hutabayu)

Another mother related:

I really had plenty of breast milk. My breasts felt full and tensed after consuming *torbangun* soup. That's why I felt better if my baby wanted to breastfeed because it released the tensed muscle around the breasts. (Mother with 4 children, from Simarimbun)

Women in this study also mentioned consuming *torbangun* soup as a way to help to control postpartum bleeding. Furthermore, it was also said to help to flush out the remaining childbirth blood and remaining placenta from the uterus, hence making it clean. It was said that it would help the mother to recover faster and get back to her daily activities.

Besides my breast milk increasing, *torbangun* soup also helped my body to expel the dirty blood from my reproductive organ. (Mother with 3 children, from Sidamanik)

Another mother remarked:

I had my reproductive organs clean faster from the childbirth blood than my Javanese neighbor who didn't consume *torbangun* soup. I told her to consume *torbangun*, but she didn't want to. (Mother with 3 children, Sidamanik)

Discussion

The Use of Torbangun as a Lactagogue

Breastfeeding as a process is culturally constructed; that is, in spite of its physiological base, the process itself, its meaning, and the way it is integrated into cultural systems varies globally. In most Asian societies, for example, birth and the immediate postpartum

period are considered to be vulnerable times for mother and child. Societies in this region, therefore, tend to have certain sets of beliefs and practices for coping with this life change and for dealing with the uncertainty associated with childbirth. Many cultures prescribe certain diets for lactating women. Rice, gruel, soup, vegetables, and edible wild plants may be used extensively by many cultures during the postpartum period to promote milk production. In the United States, beer and brewer's yeast have been touted as lactagogues. Fenugreek tea is a popular lactagogue in the United States but is also used in Argentina, Egypt, Iraq, North Africa, and Sudan.⁷ Northern Mexicans make special teas from "hot" plants such as sesame and absinthe, and in some parts of Latin America, herbal teas are drunk in the evening to stimulate milk for the morning.⁸ In Africa, lactating Fulani women in rural eastern Nigeria eat wild plants to stimulate breast milk production, especially the leaves of *Veronia colorate* and fruits of *Lannea schiniperi*.⁹ Other work focused on herbal use during lactation has been conducted in Ghana,^{10(pp141-159)} Zaire,¹¹ and Zimbabwe.¹²

Traditional or folkloric knowledge of medicinal plants is an integral part of cultural understanding of health and disease. Food beliefs related to the lactation period are diverse.¹³ It is generally assumed that the traditional diet after childbirth should consist of food containing "hot" properties. For example, Gujarati women in Bangladesh consume dill seed soon after giving birth to recover¹⁴ and consume *kaltu*, *penjerri*, or *kalo jeera barta* ("sweetmeat" consisting of whole meal wheat flour, nuts, various spices, and unrefined sugar) to increase their breast milk production.¹⁵ The Hmong women of Laos consume herbs known as *tshuaj quib* (chicken herbal medicine) to enhance breast milk production.¹⁶

Traditionally, Batakese lactating women consume *torbangun* during the first month after giving birth. They consume a bowl of soup 3 times a day with the belief that *torbangun* stimulates the breast milk production. Currently, however, a mother commences the soup consumption on the second day after giving birth. This is because many new mothers now give birth not at home but at their midwives' premises. There are no restrictions on the frequency with which *torbangun* is to be consumed. These traditional practices overlap with the timing of lactogenesis stage II. During this stage, breast milk volume increases rapidly during the period of 36 to 96 hours postpartum, and then abruptly levels off.¹⁷

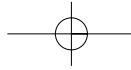
Conclusion

The results of the present study show that the tradition of consuming *torbangun* during the confinement period is still practiced by the Batakese lactating women in Simalungun. What is striking is the degree to which young Batakese women maintain traditional confinement practices in the modern era. Although modern obstetric care is provided for mothers and their infants in the midwives' homes, and although the women utilize the care provided, most of them prefer their traditional practices when they have their babies. Knowledge of existing childbirth beliefs and practices among Batakese women needs to be a prime concern in establishing maternal health programs especially in Indonesia. For example, since Simalungun mothers believe that there are confinement diets that can promote breast milk, health professionals should consult pregnant Simalungun women and then support their family in order to bring these foods to them during their hospital stay if they wish to do so.

In conclusion, the results gained from this study show that the tradition of the Simalungun Batakese lactating mothers in consuming *torbangun* during their confinement period has been practiced for hundreds of years and is still strongly maintained. From this study it is clear that the *Coleus amboinicus* Lour plant is perceived to have a beneficial role in the Batakese diet, particularly for maternal health. However, further investigations, including human clinical trials, are required to substantiate its benefits in nutrition and health in humans.

References

1. Grivetti LE, Ogle BM. Value of traditional foods in meeting macro and micro nutrient needs: the wild plant connection. *Nutr Res Rev.* 2000;13:31-46.
2. Damanik R, Damanik N, Daulay Z, et al. Consumption of Torbangun leaves (*Coleus amboinicus* Lour) to increase breast milk production among Batakese women in North Sumatera Island, Indonesia. *Asia Pac J Clin Nutr.* 2001;10(4):S67.
3. Damanik R, Wahlqvist ML, Wattanapenpaiboon N. The use of a putative lactagogue plant on breast milk production in Simalungun, North Sumatera, Indonesia. *Asia Pac J Clin Nutr.* 2004;16(4):S87.
4. Pillsbury BLK. Doing the month: confinement and convalescence of Chinese women after childbirth. *Soc Sci Med.* 1978;12:11-22.
5. Manderson L. Traditional food classification and humoral medical theory in Peninsular Malaysia. *Ecol Food Nutr.* 1981;11:81-93.
6. Minichiello V, Aroni R, Timewell E, Alexander L. *In-Depth Interviewing: Principles, Techniques, and Analysis.* 2nd ed. Melbourne: Longman; 1995.
7. Riordan J, Kathy GH. Breastfeeding care in multicultural populations. *JOGNN.* 2001;30:216-223.



8. Baumslag N. Breastfeeding: cultural practices and variations. *Adv Int Matern Child Health*. 1987;7:36-50.
9. Lockett C. *Nutritional Consequences of Food-Related Behaviors During Drought and Chemical Composition of Edible Wild Plants Consumed by Groups Most Vulnerable During the Dry Season* [Dissertation]. Davis: University of California; 1999.
10. Ebin V. *Interpretations of Infertility: The Aowin People of Southwest Ghana. Ethnography of Fertility and Birth*. C. MacCormack. London: Academic Press; 1982.
11. Lewis W, Elvin-Lewis M. *Medical Botany*. New York: Wiley; 1977.
12. Mutambirwa J. Pregnancy, childbirth, mother and child care among the indigenous people of Zimbabwe. *Int J Gynaecol Obstet*. 1985;23: 275-285.
13. Grivetti LE. Nutritional anthropology. An integrated approach to pregnancy and delivery. In: Shils ME, Olson JA, Shike M, eds. *Modern Nutrition in Health and Disease*. 8th ed. Philadelphia, PA: Lea & Febiger; 1993:1517-1525.
14. Zeithlyn S, Rowshan R. Privileged knowledge and mothers perception: the case of breastfeeding and insufficient milk in Bangladesh. *Med Anthropol Q*. 1997;11:56-68.
15. Woollett A, Matwala D. Pregnancy and antenatal care: the attitudes and experiences of Asian Women. *Child: Care Health Dev*. 1990;16: 63-78.
16. Phongphit S, Hewison K. *Thai Village Life: Cultural and Transition in the Northeast*. Bangkok: Mooban Press; 1990.
17. Neville MC. Physiology of lactation. *Clin Perinatol*. 1999;26:251-261.