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NIRA WATER (*ARENKA PINNATA*) ON BREAST MILK VOLUME FOR BREASTFEEDING MOTHERS

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A B S T R A C T

Breast milk is the best nutrition for all infants, specifically to the nutritional of human babies for the first six months of life. Mother's higher education level, smoking during pregnancy, domestic violence or lack of husband support, previous medical history, breast complications during breastfeeding such as; the nipple goes inside mastitis, and the use of childbirth assistance such as Sectio Caesarea, young mothers (teenagers), postpartum depression, lack of breast milk and use of baby bottles/pacifiers negatively impact the success of exclusive breastfeeding. Various traditional methods (complementary therapy) of herbal plants are carried out to stimulate the production of breast milk such as Nira water (*Arenga pinnata*). They are chosen because they are considered natural and can reduce the side effects of chemicals. This study aims to determine the effect of giving nira water to breast milk volume. The sample is all breastfed mothers 0-7 days size is determined by a total sampling of 8 people. The technique of collecting data is by observing and measuring the volume of ASI. This study using paired sample t-test to analysis statistics. There is an increase in the volume of breast milk before giving nira water ($11,25 \pm 3,06$) and after giving nira water ($54,50 \pm 9,09$). From statistical analysis shows that there are significant differences ($p < 0.01$). Nira water 200 cc can increase the volume of breast milk recommended.

I. INTRODUCTION

Breast milk is the best nutrition for all infants, specifically to the nutritional of human babies for the first six months of life. Breast milk nutrition is very balanced, appropriate and provided in a form that is available biologically and is easily digested by infants. The immunological and anti-inflammatory properties in breast milk good for protecting babies against various infections, allergy, diseases, and obesity. Therefore, breastfeeding an infant is considered as one of the categories of growth and development factors for the baby [1].

Some studies mentioned that, breastfed the babies will not experience constipation, diarrhea or stomach disorders, reduce infant mortality, and can help improve cognitive and motor development that has been shown to have a higher intelligence quotient (IQ). Benefits for breastfeeding mothers are that breastfeeding can reduce the risk of developing type 2 diabetes, ovarian and breast cancer, breastfeeding for 6 months indirectly becomes a natural contraceptive such as lactational amenorrhea and adequate recovery of maternal weight. In addition to the health benefits, breastfeeding also ensures environmental, psychosocial [2] [3].

To receive optimal benefits, breastfeeding must begin within one hour after the birth of the baby and must be maintained exclusively for the first six months of the baby's life. Exclusive Breastfeeding (EBF) means a newborn baby is only breastfed and no other liquid (even water) or solids are provided, with the exception of oral rehydration salts, vitamins, mineral supplements or drugs. [4] [5]. World Health Organization (WHO) and the United Nations International Children's Fund (UNICEF) recommend that a capable mother must practice and maintain exclusive breastfeeding during the first six months of her baby's life. Furthermore, after 6 months may be given formula milk or weaning food beside breast milk. EBF coverage has been estimated to be avoided 13% –15% of deaths among children under five years of age especially in middle and low-income settings [2] [4].

WHO data states that the average comparison of EBF coverage in 2000-2015 in ASEAN and SEARO countries is Sri Lanka 76%, Cambodia 65%, North Korea 65%, while Indonesia is only 32%. In 2017, Indonesia's EBF coverage in 2018 reached 61.5%, while 38.5% was not EBF, with the highest coverage in East Nusa Tenggara Province 79% and the lowest in Aceh Province (49.6%). While the coverage of EBF in West Sumatra is 71.4% [19].

The coverage of exclusive breastfeeding in West Sumatra was 48.7% and 28.6% were not exclusive breastfeeding, with the highest coverage in Sawahlunto Sijunjung City at 71.8% and the lowest coverage in the Mentawai Islands District at 0.4%. In 2017, Coverage of EBF in West Pasaman amounted to 51.8% [21]. Based on the database from the West Pasaman Health Profile in 2018 it is known that the coverage of EBF is 75.7% and 24.3% is not EBF while the

coverage of skin to skin contact in Puskesmas Ophir is 79,6%. The lowest coverage is Jorong Simpang Tiga Timur, it is known that in 2018 there were 41 newborns and only 28.6% received EBF, while 71.4% of infants did not get EBF [18].

The success of EBF is multifactorial. Several factors support the success of EBF such as mother-baby skin contact, breast pumping, health education efforts to increase maternal knowledge and health workers about breastfeeding. However, there are factors such as mother's occupation, mother's higher education level, smoking during pregnancy, domestic violence or lack of husband support, previous medical history, breast complications during breastfeeding such as; the nipple goes inside mastitis, and the use of childbirth assistance such as Sectio Caesarea, young mothers (teenagers), postpartum depression, lack of breast milk and use of baby bottles/pacifiers negatively impact the success of exclusive breastfeeding [5].

Various traditional methods (complementary therapy) of herbal plants are carried out to stimulate the production of breast milk such as nira water. Herbal plants are chosen because they are considered natural and can reduce the side effects of chemicals [16]. Nira water is a sweet liquid obtained from the stems of Arenga Pinata plants that grow in tropical regions like Indonesia, commonly called the Kolang Kaling. Traditionally nira water is processed into brown sugar/palm sugar and is used as a complement to cakes and desserts in food [6]. Some of the benefits found that Nira plants can gain weight, diarrhea, warm the body, treat fever, increase breast milk volume, rheumatism medication, and headaches [7].



Fig 1. Nira Plant (*Arenga pinnata*)



Fig 2. Nira water

II. METHODS

This was experimental study with one group pre and post test. The study was conducted in September-October 2019 in Jorong Simpang Tiga Timur, West Pasaman. Mothers breastfeeding the first-seventh day in as many as 8 people. Sampling technique with accidental sampling, namely sampling in accordance with the existing population at the time of the study underway with inclusion criteria breastfeeding mothers do not experience complications in breast and other diseases and do not consume breast-enhancing supplements. Nira water is taken from the stems of nira plants. Before being given to the respondent first filtered water to clean up the impurities contained in the sap of water. Then measured with a measuring cup as much as 200cc into 8 glasses and given to the sample for 6 days with 2 times per day (morning and evening). Diet the food consumed was controlled for 6 days of the study. The paired t-test to determine differences on breastmilk volume these groups before and after treatment. Data are expressed as Means \pm Standard Deviation.

III. RESULT

Table 1. Breastmilk volume before and after giving nira water (*Arenga pinnata*)

Breastmilk volume	N	Mean	Standard deviation	P
Before	8	11,25	3,06	0,000
After	8	54,50	9,09	

Statistical analysis with paired sample t-test showed significant differences before and after giving nira water ($p < 0,01$) (Table 1)

IV. DISCUSSION

Based on table 1, there is an increase in the volume of breast milk before giving nira water ($11,25 \pm 3,06$) and after giving nira water ($54,50 \pm 9,09$). From statistical analysis shows that there are significant differences ($p < 0,01$).

Breast milk produced after birth on the first day is colostrum (10-100 cc), and on 2-4 days will increase with a volume of about 150-300 ml / 24 hours. Breast milk contains important components such as protein as much as 0.9-1.2 g / dL, fat as much as 3.2-3.6 g / dL, and 6.7-7.8 g / dL carbohydrate. The range of Energy produced due to breast milk is reported to be 65-70 kcal / dL. This energy is sufficient for infants and will continue to increase until the age of six months [8].

The breast milk volume after 10 days and thereafter birth until the baby is three months old or is called mature breast milk, breast milk can produce around 300 -800ml / day, and the milk will continue to increase on days or weeks onwards [17]. The process of forming breast milk

begins early in pregnancy, breast milk is produced due to the influence of hormonal factors, the process of forming breast milk starts from the process of lactogen formation and hormones that influence. [20].

Healthy physical condition, skin to skin contact, and baby's sucking are factor will support optimal milk production both in quality and quantity. [1]. During breastfeeding the mother must take care of her health. Mothers who are sick generally do not affect milk production but due to fears of the mother to the health of her baby (psychology) and psychosocial can inhibit milk production [9]. In addition, smoking and alcohol consumption are also factors that inhibit milk production. These conditions cause no stimulation to the nipple so that milk production is reduced or stopped [10]. The amount and quality of breast milk is influenced by nutrition and fluid intake. During breastfeeding, the mother requires quite a lot of carbohydrates, protein, fat and mineral vitamins. The additional number of calories needed by nursing mothers in the first six months is 700 calories/day [11] [8].

Nira water (*Arenga Pinnata*) contains carbohydrates; 15% sucrose, glucose, fructose, protein, calcium, phosphorus, ascorbic acid [12] which will help produce the hormone prolactin released by the anterior pituitary gland (a hormone to produce milk) in the body of a nursing mother, while the contents of Vitamins C, B, E, and Folic acid helps increase feelings of pleasure by channeling neurotransmitters to form the hormone oxytocin released by the posterior pituitary gland in the process of increasing milk volume [9] [13]. The sucrose is also able to help the formation of the hormone prolactin and oxytocin which stimulates the breasts to produce more milk. Whereas the hormone oxytocin stimulates the contraction of the very small muscles that surround the ducts in the breast, these contractions suppress the ducts and drain the milk into the reservoir under the areola. Study compared to other food ingredients, such as green beans, the nira water is higher in concentration so that it is faster to stimulate milk production in the mothers breastfeeding [20].

In addition, some research on the nira plants also has anti-inflammatory, anti-bacterial, anti-cancer and anti-biofilm effects in which contain compounds of terpenes, alcohols, alkanes, esters, phenols, quinones, aldehydes, and alkaloids, etc [14]. The fruit of the nira plants is used as a cosmetic ingredient. So it can be concluded that nira water is useful in increasing the volume of breast milk [15].

V. CONCLUSION

Nira water (*Arenga Pinnata*) 200 cc can increase the volume of breast milk recommended. However, should pay attention to the side effects that occur after drinking nira water. Side

effects from the administration of nira water have not been reported. This study uses only one group without a comparison group.

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