How to Increasing Prolactine Levels of Breastfeeding Mother with Consumption Katuk (Sauropus androgynus(L)Merr) Leaf

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ABSTRACT
Inadequate breast milk production is the most common inhibiting factor causing the cessation of exclusive breastfeeding practices an effort to increase the rate of secretion and production of breast milk is through the use of traditional herbal medicines such as decoction and extraction of katuk leaf (Sauropus androgynus). Katuk leaf extract (Sauropus androgynus) has been known to have a variety of pharmacological activities. This paper aims to review the botany, phytochemistry, ethnopharmacology, and pharmacological activities of S. androgynus, and discuss the known chemical constituents at work in S. androgynus-induced prolactin level to increasing breast milk human. The data presented in this review were collected from published literatures as well as the electronic databases of PubMed, CNKI, Web of Science, SCI finder, ACS, Science Direct, Wiley, Springer, Taylor, Google Scholar, and a number of unpublished resources, (ex: books, and Ph.D. and M.Sc. dissertations). Searching for research articles in several databases using certain keywords breast milk human and katuk (Sauropus Androgynus) leaf literature. All abstracts retrieved were screened for inclusion. All types of articles, including case series and case reports, were included due to the lack of herbal katuk leaf clinical trials. Exclusion criteria consisted of non-English and nonhuman articles. In conclusion, there was a significant effect of katuk leaf consumption towards increasing breastmilk production volume.

1. Introduction
Breast milk is an extremely complex and highly variable biofluid that has evolved over millennia to nourish infants and protect them from disease whilst their own immune system matures. The composition of human breast milk changes in response to many factors, matching the infant’s requirements according to its age and other characteristics.1,2 Breast milk is the best food for babies. Based on data from the WHO estimated 130 million babies born worldwide each year and 4 million babies die within the first 28 days of life. United National Children's Fund (UNICEF) and the World Health Organization (WHO) recommends that newborn infants are exclusively breastfed for at least six months. The achievement of exclusive breastfeeding in Indonesia have not reached the expected number that is equal to (80%). Results Indonesian Demographic and Health Survey (IDHS) (2007) show the scope of exclusive breastfeeding of infants 0-6 months (32%) and in 2012 it increased to (42%), whereas according to a report from the Provincial Health Office in 2013, the coverage of breastfeeding only 0-6 months (54.3%)4. Breastfeeding babies in Indonesia has become a culture, but the practice of breastfeeding is still far from the expected. According to the Indonesia Demographic Health Survey (IDHS) 2010 only (10%) infants were breastfed on the first day, breast-fed for less than 2 months as many (73%), breastfed 2 to 3 months as many (53%), given breastfeeding (ASI) as much as 4 to 5 months (20%) and exclusive breastfeeding until the age of 6 months as many (49%)3,4.

The problem of breastfeeding mostly occurs in primiparous, women who give birth to babies for the
Inadequate milk production is caused by various factors such as nutritional and non-nutritional factors including hormonal problems, parity, pregnancy, age and psychological factors. Nutritional factors are required by breastfeeding mothers. Nutrients are required for the synthesis of milk and for stimulating the production of hormones that play a role in the production and secretion of milk. The hormones that play a role in this process are the hormones prolactin and oxytocin. One of the main hormones that plays a role in the process of lactation is the hormone prolactin. The hormone prolactin is needed to build and maintain lactation.

In the mammary gland, the hormone prolactin specifically stimulates DNA synthesis and epithelial cell proliferation as well as the synthesis of milk proteins (casein, lactalbumin), free fatty acids, and lactose. The prolactin hormone specifically stimulates the transcription rate of the milk protein gene. Low levels of the hormone prolactin can inhibit the synthesis and secretion of milk. This has been proven by a study from Hill et al which states that the secretion of milk in mothers stops within three to four days after a decrease in prolactin levels, whereas an increase in the hormone prolactin occurs during the first week of the puerperium that triggers it. Increased milk production. Thus, the hormone prolactin is essential for the initiation and secretion of milk. Increased levels of the hormone prolactin are influenced by several factors such as frequency of breastfeeding, previous breastfeeding experience, milk production, and pharmacological drugs including the use of galactagogues. Galaktogogue is a synthetic substance or plant molecule that is used to induce, maintain and increase milk production through a complex process involving the interaction of physical and physiological factors. The most important factor in the lactation process is the prolactin hormone.

S. androgynus is a shrub grown in some tropical regions, and the leaves of this plant are treated as a common nutritious vegetable in Asia. These leaves are traditionally used by mothers in Indonesia to increase their breast milk production. Katuk (Sauropus androgynus (L) Merr) is a shrub that belongs to the Euphorbiaceae family. Katuk contains nutrients and several compounds that are useful for the synthesis and production of breast milk. Katuk contains nutrients and several useful compounds. The nutritional content of katuk leaves can increase milk production by increasing glucose metabolism for lactose synthesis. In addition, the phytosterol levels in katuk leaves are higher than other types of vegetables. Phytosterols have hormonal effects that are estrogenic so that they can increase prolactin and milk production. Another component contained in katuk leaves is papaverine. Papaverin can stimulate the release of prolactin. The papaverine content of old katuk leaves has the effect of relaxing smooth muscle and widening blood vessels, causing an increase in circulating oxytocin and prolactin hormones in the bloodstream.

2. Methods
A search was conducted for literature through Embase, PubMed, and EBSCO (all databases) from inception to June 2017 using search terms such as “breast-feed,” “Katuk leaf,” “lactation,” “herbal,” and “botanical.” All abstracts retrieved were screened for inclusion. All types of articles, including case series and case reports, were included due to the lack of herbal katuk leaf clinical trials. All herbs identified in this search with relevant data were reviewed. Additional articles were obtained from article reference lists. Herbal katuk leaf were evaluated for historical use, proposed mechanisms of action, effects, usual dosage, and safety and tolerability data. Natural Standard was used to obtain supplemental information on the identified herbal Katuk Leaf.

3. Results
Soka et al, 2010, Sa’roni et al, 2012. S. androgynus is widely believed in most Southeast Asian countries like Indonesia, Thailand, and Malaysia to increase breast milk production during lactation. The two hormones of prolactin and oxytocin

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are involved in the process of milk synthesis and secretion, acting independently on different cellular receptors, and their combined actions are essential for successful lactation (Johnston and Amico, 1986). Supplementation of mature S. androgyanus leaves extract (173.6 mg/kg) increased the expression of prolactin and oxytocin genes in lactating mice 15.75- and 25.77-fold, respectively, compared to the control group in a lactating BALB/C mice model (Soka et al., 2010). Similar research results also show that S. androgyanus leaves extract (6 mg/kg) increases the mother's breast milk production up to 50.7% compared with placebo in lactating woman subjects (Sa'roni et al., 2012). However, both studies lack dose dependence, and the effective dosage to be used in this case is an issue that is currently unresolved. S. androgyanus may improve breast milk production exerting as an inducer of the gene expression that is required for good lactation, and therefore supports the current practice during lactation.

Diyan Indrayani et al, randomized controlled trial. The Effect of Katuk (Sauropus androgyanus (L) Merr) Leaf Biscuit on Increasing Prolactine Levels of Breastfeeding Mother. The results showed that there was an effect of katuk leaf biscuits on increasing serum prolactin levels in breastfeeding mothers. It is suggested that katuk leaf biscuits be used as an alternative as an effort to increase breast milk production so that it can support the success of exclusive breastfeeding.

Juliastuti, the research used quasi-experimental design with pre-test and post-test design, the sampling technique with purposive sampling as many as 20 breastfeeding mothers, the results of the study were analyzed by independent t-test. The results showed that sweet leaf decoction and Sweet leaf extract were effective to fullfill the adequacy of breast milk. The sweet leaf decoction in this study proved to gain infant weight compared to sweet leaf extract with p value 0,000.

S Handayani et al, the research was RCT post-test only control group design with a double-blind approach with sample consisted of n1=n2=50 respondents. The conclusion of the research there was a significant effect of katuk leaf biscuit consumption towards increasing breastmilk production volume. So that the biscuit can be used as a supplement to increase the breastmilk volume.

Endang Suwanti et al, Pre-Postttes with Control Group Design. In the research researcher measure influence intervention at eksperiment group with compararing group control. Research workedat midwife practice Independenat the January as to Juli 2015. Population in the research is all of mother breast feeding at midwife practice Independent (BPM) on Klaten district. Sampling metods is quota sampling with inclusive criterion normaly newborn and healty. Research chat January-July 2015. Data analysis performed to describe the variabel that will be studied and performed bivariate analyzes to the relationship of independen and dependent variabels using the chi square. Results research is70% intervention group more produced milk than kontrol group produced milk enough 30%. Result statistik Analise chi square p value =0,002. Conclution there was significant relationship consumption ekstrac katuk for sufficient breast milk.

Desi et al, Prospective Cohort Study design approach used with samples were the postpartum mothers who Gave birth as much as 40 persons. The use of data collected to observe your food recall form the food consumed by the mother for 3 days and gives Breastfeeding product observation sheets. A Results of the study Showed that there was an influence of food consumptions of postpartum mother to the Breastfeeding production (fluid intake, calories total, sauropus androgyanus and musa paradisiaca) and fluid intake was the predominant factor that influent to the Breastfeeding production of postpartum mother. Expected to the postpartum mother to consume the fluids as much as 8 to 12 glasses a day for breastfeeding increasing production and need to be associated with postpartum mother to consume sufficient amount of calories, sauropus androgyanus and musa paradisiaca.

4. Conclusion

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5. References