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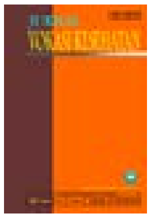

BAKTERI ASAM LAKTAT PADA USAPAN KULIT SEKITAR AREOLA PAYUDARA, KOLOSTRUM DAN FESES BAYI YANG DIINISIASI MENYUSU DINI

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Abstrak

Inisiasi Menyusu Dini (IMD) merupakan salah satu intervensi kunci untuk menekan Angka Kematian Bayi (AKB). IMD memberikan kesempatan yang lebih banyak kepada bayi untuk mendapatkan bakteri baik yang ada di kolostrum dan kulit sekitar payudara ibu. Penelitian ini bertujuan untuk melihat perbedaan jumlah koloni Bakteri Asam Laktat (BAL) pada kulit payudara, kolostrum dan feses bayi yang berhasil IMD dan tidak berhasil IMD. Desain penelitian menggunakan *cross-sectional comparative.* Sampel adalah Bidan Praktik Mandiri (BPM) yang ada di wilayah Puskesmas Anak Air, Ikur Koto, Ambacang dan Belimbing dengan jumlah sampel sebanyak 38 ibu dan bayi yang lahir secara normal *pervaginam* dengan berhasil atau tidak berhasil IMD. Pemeriksaan sampel dilakukan di Laboratorium Mikrobiologi Teknologi Hasil Ternak (THT) Fakultas Peternakan Universitas Andalas Padang. Analisa data menggunakan Uji *Mann-Whitney*. Terdapat perbedaan yang signifikan total koloni BAL pada sampel usapan kulit sekitar areola payudara (p=0,002), tidak terdapat perbedaan yang signifikan total koloni BAL pada sampel kolostrum (p=0,057) dan terdapat perbedaan yang signifikan total koloni BAL pada sampel feses bayi (p=0,01) antara kelompok ibu yang tidak berhasil IMD dan berhasil IMD. Kesimpulan bahwa total koloni BAL pada usapan kulit payudara, kolostrum dan feses bayi yang berhasil di IMD lebih banyak dibandingkan yang tidak berhasil di IMD.

LACTIC ACID BACTERIA ON SKIN AROUND AREOLA, COLOSTRUM AND THE INFANT FECES WITH EARLY BREASTFEED INITIATION

Abstract

Early Breastfeed Initiation (IMD) was one of the key interventions to reduce Infant Mortality Rate (IMR). IMD provided more opportunity to the baby to get the good bacteria in the colostrum or the skin around the mother's breast. This study aimed to look at the difference in the amount of lactic acid bacteria colonies (BAL) on breast skin, the colostrum, and the faces of baby with and without successful IMD. The design of this study was analytical study with cross sectional comparative. Samples were 38 mothers with and without successful IMD which were taken in 4 Independent Midwives Practice (BPM). The samples examination was done in the Microbiology Laboratory of Animal Product Technology (THT) Faculty of Animal Science Andalas University Padang. Data analysis were done by the Mann-Whitney test. There was a significant difference in total colony BAL on skin around the areola (p= 0.002), no significant difference in total colony BAL on a colostrum sample (p= 0.057) and a significant difference in total colony BAL on baby feces samples (p= 0.01) between a group of mothers with and without successful IMD. In this study it can be concluded that there was a BAL on the skin around the areola, the colostrum, and the baby faces with early breastfeed initiation.

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Introduction

IMD (early breastfeeding) in the first hour of life has been proven to prevent infant mortality in the first month by up to 22% while breastfeeding on the first day of birth (24 hours) can reduce infant mortality by 16% (Stanley N; Kitaw, Demissie, 2015). IMD is also known to prevent infectious diseases such as pneumonia and diarrhea which are the cause of infant mortality worldwide (Roesli, 2012). Based on these large benefits, WHO and UNICEF recommend IMD as a synergistic step and are considered as an act of "saving lives" (Maryunani, 2015).

Previous research has not yet explained the potential mechanism of how IMD can prevent infant death, but the interaction between mother and baby during IMD is very helpful in the initial process of forming the baby's immune system, one of which is in the process of colonizing good bacteria in the digestive system (Stanley N; Kitaw, Demissie, 2015).

When the baby's IMD process will be for at least an hour in the mother's chest. Before successfully breastfeeding, it will lick the skin around the breast of the mother to cause the entry of good bacteria into the digestive tract of the mother (Maryunani, 2015). IMD will also make the baby have a greater chance of getting colostrum that contains antibodies Secretory Immunoglobulin A (SigA), bifidus factor and commensal bacteria the highest breastmilk compared with transitional or mature breastmilk (Lee, *et al*., 2015). Research that has been done shows that breastmilk especially colostrum is the largest source of lactic acid bacteria for infants (Syukur & Purwati, 2013).

Lactobacillus, Streptococcus and Bifidobacteria are some genera of good bacteria that are included in the group of lactic acid bacteria (BAL) which are predominantly found in the feces of infants who are exclusively breastfed (Rodriguez, 2014). Lactic acid bacteria are Gram positive bacteria and the most widely used bacterial group as probiotics. The benefits of lactic acid bacteria in the digestive system have been widely studied, including being able to increase the immune response both humoral and cellular so that it can protect the body from various infections (Latuga, Stuebe, & Seed, 2014).

Methodology

The design of this study is analytic research with cross-sectional comparative. The study population was all post-partum mothers and their babies on the first day of vaginal birth in the Koto Tangah and Kuranji Districts. Samples were taken at 4 Independent Practice Midwives (IPM) from 38 successful and unsuccessful baby mothers who met the study criteria. The sample examination was conducted at the Laboratory of Animal Product Technology Microbiology (THT) Faculty of Animal Husbandry, Andalas University, Padang. Data analysis using the Mann-Whitney test.

Result And Discussion

Table 1. Difference in the Number of Lactic Acid Bacteria Colonies on Skin Around the Breast Areola with and without successful Early Breastfeeding Initiation

	n	**Median (Min-Max)** (x 10^3CFU/ml)	**Mean±SD** (x 10^3CFU/ml)	***p***
Unsuccessful IMD	19	16 (11-39)	17,26±6,82	0,002
Successful IMD	19	29 (12-41)	25,05±10,25	

Table 2. Difference in the Number of Lactic Acid Bacteria Colonies in Mothers Colostrum with and without successful Early Breastfeeding Initiation

	n	**Median (Min-Max)** (x 10^3CFU/ml)	**Mean±SD** (x 10^3CFU/ml)	***p***
Unsuccessful IMD	19	21 (12-66)	17,26±6,82	0,057
Successful IMD	19	48 (12-63)	42,53±19,288	

Table 3. Difference in the Number of Lactic Acid Bacteria Colonies in Infant Faces with and without Successful Early Breastfeeding Initiation

	n	**Median (Min-Max)** (10^4 CFU/g)	**Mean±SD** (10^4 CFU/g)	***P***
Unsuccessful IMD	19	18 (12 - 43)	22,89±10,624	0,01
Successful IMD	19	29 (11 -55)	29,05±14,75	

Difference in the Number of Lactic Acid Bacteria Colonies on Skin Rubbing Around the Areola of the Breast that Does Not Succeed Early Breastfeeding Initiation and Successful Early Breastfeeding Initiation

Based on the results in Table 1 it can be seen that the total LAB in the skin swab samples around the breast areola that succeeded in IMD was higher than the skin smear sample around the breast areola of the mother who did not succeed IMD. The total median BAL in skin smear samples around breast areola that did not succeed IMD was 16x103CFU/ml with a minimum and maximum value of 11x103CFU / ml - 39x103 CFU / ml while the total median BAL for skin smear samples around successful breast areola was 29x103CFU / ml with minimum and maximum values is 12x105CFU / ml - 41x103CFU / ml. The Mann_whitney statistical test results obtained p value = 0.002, it can be concluded that there is a significant difference between the total BAL colonies on skin swab samples around the breast areola that did not succeed in IMD and succeeded in IMD.

Still lack of studies which is linking the effect of IMD on the number of BAL colonies on breast skin. However, several previous studies have explained that breast skin bacteria are one source that contaminates breast milk (Bergmann, Rodrıguez, Salminen, & Szajewska, 2014).

Bacteria in the breast duct are discovered during the third trimester of pregnancy. This is driven by changes in pregnancy hormones and changes in the maternal intestinal microbiota (entero-mammary pathway). Bacteria found in the mother's intestines will reach the breast through endogenous pathways. Dendritic cells will enter the maternal intestinal lumen and bind to non-pathogenic bacteria and then enter the mesenteric lymph node. Then the dendritic cells that bind to these good bacteria can spread through the blood and lymph circulation to all mucosal layers that are connected with MALT (Mucosa Associated Lymphoid Tissue) such as respiratory tract, urogenital, tear glands and especially epithelial glands of the mother's breast (Martin, *et al*., 2012).

During the third trimester, pre-colostrum pregnancies begin to fill the duct and bacterial concentrations continue to increase until delivery and the suckling period. The areola and nipple are getting bigger, the sebaceous glands are more active and there is also an increase in the flow of blood vessels and lymph to the breast. This condition is very beneficial for bacterial migration. The concentration of bacteria in the duct will further decrease during the weaning period. That is because the process of apoptosis, a decrease in lactose milk and also a decrease in lactation hormone. Physiologically, after weaning there are no bacteria found in the breast duct (Gomez-gallego, Garcia-Mantrana, Salminen, & Collado, 2016).

The process of bacterial migration from the duct to the breast skin is also known from the beginning to be influenced by lactation hormone. One of the hormones that help the process of ejection of breast milk is the hormone oxytocin. Breastfeeding immediately after delivery is proven to significantly increase the amount of the hormone oxytocin ($p < 0.05$). The mean oxytocin level in mothers who were on IMD was 58.47 pg / ml while those who were not on IMD was 3.33 pg / ml.13 The high rate of oxytocin in the IMD group would ultimately increase the amount of BAL on the breast skin of the mother.

The total LAB in colostrum samples that succeeded in IMD was higher compared to colostrum mothers who did not succeed IMD. The total median LAB in colostrum samples that did not succeed IMD was 21x105 CFU / ml with a minimum and maximum value of 12 x 105 CFU / ml - 66 x 105 CFU / ml. While the total median LAB in colostrum samples that succeeded in IMD was 48x105CFU / ml with a minimum and maximum value of 12 x 105 CFU / ml - 63 x 105 CFU / ml.

Mann Whitney statistical test results obtained p value = 0.057, it can be concluded that there is no significant difference between the total BAL colonies in colostrum samples that did not succeed in IMD and succeed in IMD. The results of this study explain that the BMI process does not affect the amount of BAL contained in colostrum but conversely the amount of BAL contained in breast milk will affect the number of BAL contained in baby's feces.

The types of bacteria that can be isolated from breast milk include Staphylococcus, Lactococcus, Enterococcus, Streptococcus and Lactobacillus species. Lactobacillus is the most commonly found baketri in breast milk and several species such as L. gasseri, L. salivarius, L. rhamnosus, L. plantarum and L. Fermentum have been widely used as probiotics in various foodstuffs (Yuliawati, Jurnalis, Purwati, & Lubis, 2012).

According to research conducted by Gomez-gallego *et al*., (2016) the bacteria contained in breast milk are influenced by the type of delivery, type or stage of milk production, antibiotic administration, gestational age, maternal health status, genetics and nutrition. The number of bifidobacterium and Lactobacillus spp is more found in mothers with normal labor than in cesarean section. Mothers born at term of gestation also have lower numbers of Enterococcus bacteria and higher bifidobacterium (Utami, Purwaka, Mertaniasih, & Etika, 2012).

These results are also supported by the study of Khodayar *et al*., (2014) which concluded that the number of Bifidobacterium was also found to be more common in normal deliveries and term pregnancies.

The total BAL in the stool sample of infants who succeeded in IMD was higher than the total BAL in the faecal sample of infants who did not succeed IMD. The total median LAB in faecal samples of successful infants with IMD was 29x103CFU / g with their maximum values being 11x103CFU / g -55 x103CFU / g. The total median LAB in faecal samples for infants who did not succeed in IMD was 18x103CFU / g with their maximum values being 12x103CFU / g - 43x103CFU / g. Statistical test results obtained p value = 0.01, it can be concluded that there is a significant difference between the total BAL colonies in faecal samples of infants who did not succeed in IMD and succeed in IMD.

The results of this study are supported by research conducted by Yuliawati *et al*., (2012) on mice that had previously been infected with Enteropathogenic Escherichia coli (EPEC). Mice were then given

Pediococcus pentosaceus (P. pentosaceus) in "curd" isolation which included BAL and was useful in improving the balance of intestinal microflora and inhibiting the growth of pathogenic microbes. The highest average total LAB bacteria was found after 12 hours after P. Pentosaceus dose 2x108CFU / g which was 97.0x108CFU / g and was very significantly different from the positive control group ($p < 0.01$) .

Previous studies conducted by Utami *et al*., (2012) on 30 newborn samples that were IMD and not IMD in vaginal delivery found that there were no significant mean differences in the number of anaerobic bacteria in a 12-hour postpartum infant sample between non-infants at IMD and at IMD ($p = 0.296$). The number of anaerobic bacteria then became significantly different in the 24-hour postpartum faces samples. This study further explained that although there were no significant differences in the number of anaerobic bacterial colonies in a 12-hour postpartum faecal sample in the feces of IMD infants, anaerobic bacterial count including BAL was found to be greater in infants in IMD compared to those not in IMD. IMD is more advantageous in terms of microbiotic patterns both in variations in the type and number of microbiota colonies.

Conclusion

In this study it can be concluded that the total BAL colonies on breast skin, colostrum and infants faces that succeeded in IMD were more than those that did not. There was a significant difference in the number of LABs in skin swab samples around the areola of the breast and feces of successful and unsuccessful infants at IMD.

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