Effect of synbiotic supplementation on breast milk TGF-β_2 level in overweight and obese women

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Background: Human milk is rich in protective proteins which play a part in the prevention of microbial infection in suckling infants. Transforming growth factor β (TGF-β) is considered a key immunoregulatory factor in promoting IgA production and induction of oral tolerance. During the early postnatal period, when endogenous TGF-β production in the intestine is sparse, maternal milk constitutes an important exogenous source. So, this study aimed to determine the effects of synbiotic supplementation on breast milk TGF-β_2 levels in over weight and obese women.

Materials/Patients and Methods: In this randomized, double-blind, placebo-controlled trial, 55 lactating mothers with BMI≥25 were randomly divided into two groups to receive daily supplement of synbiotic (n=25) or a placebo (n=30) for 30 days. Breast milk samples (15 mL) were collected into sterile glass bottles by self-expression before the baby was nursed in the morning and stored at - 70°C until analysis. Breast milk TGF-β_2 levels were measured using a commercial Platinum ELISA kit according to the manufacturer's protocol before and after the intervention. Paired t-test and independent t test were used to analyze within group and between group comparisons. P value of < 0.05 was considered statistically significant.

Results: The mean breast milk TGF-β_2 levels in synbiotic and placebo groups were 255 ± 41.2 and 258.8± 48 pg/ml respectively. There was no significant difference in the baseline measures between the supplemented and the placebo groups. The TGF-β_2 of breast milk increased significantly from 255 ± 41.2 to 347.3 ± 49.1 pg/ml in the supplemented group (p = 0.04), whereas it decrease from 258.8± 48 to 340± 47 pg/ml in the placebo group (p = 0.2). Also, the comparison of changes in the breast milk TGF-β_2 level showed a significant difference (p = 0.02) between the two groups during the study.

Conclusions: The results showed that administration of synbiotics for overweight and obese women was preventing breast milk TGF-β_2 decreases with time. However, further studies using different species of probiotic bacteria and longer duration of supplementation are necessary to make concise conclusions.

Key words: Overweight, Obese, Breast milk, IgA, Synbiotic supplementation