

# Comparison of Combined Probiotic and Antibiotic Therapy Versus Antibiotic Therapy Alone in Treatment of Bacterial Vaginosis

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## Abstract

**Objectives:** To compare the efficacy of combined probiotic and antibiotic therapy with antibiotic therapy alone in treatment of bacterial vaginosis.

**Study design:** Randomized controlled trial.

**Setting:** Holy Family Hospital Rawalpindi.

**Duration of study:** Six months from 1.1.2015 to 30.6.2015.

**Methodology:** Sixty women with bacterial vaginosis (Age group of 18 – 45 years) according to Amsel's criteria were randomly allocated to the study group A&B. Group A: Probiotic and Antibiotic. Group B: Antibiotic alone. Women were called after the treatment period and examination was repeated to see that whether bacterial vaginosis is cured or not. Data was collected and analyzed on SPSS version.10. Chi-square test was applied to compare efficacy of both drugs.

**Results:** Comparison of efficacy of combined probiotic and antibiotic therapy with antibiotic therapy alone in treatment of bacterial vaginosis was recorded as 83.33%(n=25) in Group-A and 36.67%(n=11) in Group-B.

**Conclusion:** Combined therapy is significantly more effective when compared with antibiotic therapy alone for the treatment of bacterial vaginosis. However, some other studies on larger sample size are required to validate our findings.

**Keywords:** Bacterial vaginosis, management, combined probiotic, antibiotic therapy with antibiotic therapy alone, efficacy.

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## Introduction

Bacterial vaginosis is one of the most common lower genital tract disorders in women of reproductive age, and most prevalent cause of vaginal discharge and malodor.<sup>1</sup> The prevalence rates for bacterial vaginosis are more than 29%.<sup>2</sup> It is characterized by a change in normal vaginal flora, in which the predominant lactobacilli are replaced by various other microorganisms, such as Gardnerella

vaginalis, Mobiluncus SPP, Peptostrepto coccus SPP; Mycoplasma hominis and Ureaplasma urealyticum. It is associated with an increase in vaginal pH.<sup>3</sup> Gardnerella vaginalis causing bacterial vaginosis is most common cause of vaginal discharge.<sup>4</sup> The bacteria adhere to the desquamated epithelial cells with a distinctive appearance of clue cells.<sup>5</sup>

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Complications of bacterial vaginosis include preterm birth, preterm rupture of membranes, chorioamnionitis, abortion, infertility, high HIV risk, and urinary tract infection.<sup>6</sup> It is associated with various factors including vaginal douching, multiple sex partners, new sex partner, smoking and contraceptive use.<sup>6</sup> It is diagnosed by Gram stain criteria, Nugent criteria and Amsel's criteria.

Various treatment modalities are present for bacterial vaginosis. One is by antibiotics. Among which Metronidazole is the most common drug.<sup>8</sup> It is a Nitroimidazole antimicrobial agent and has been widely used in treatment of bacterial vaginosis. It can be used through oral and vaginal routes and different preparations are available.<sup>9</sup> But now *Gardnerella vaginalis* species are showing increasing resistant to Metronidazole.<sup>10</sup>

Other option for treatment of bacterial vaginosis is by probiotics. Probiotics are "live microorganisms which when administered in adequate amount confer a health benefit to the host".<sup>9</sup> Efficacy of antibiotics can be increased by addition of probiotics. In one study, oral Metronidazole therapy (500mg twice daily for 7 days) plus oral probiotics twice daily for 30 days (1 capsule containing  $10^9$  *L. rhamnosus* GR-I and  $10^9$  *L. reuteri* RC -14) showed the significantly increase efficacy compared with oral Metronidazole alone. At 30 days follow up 88% had normal vaginal flora in probiotic group compared to 40% in placebo group.<sup>9</sup>

This study will be helpful to find out the new treatment regimens for bacterial vaginosis, as resistance is being developed against the routinely used treatment regimens. If probiotics found to be effective in increasing the efficacy of antibiotics then they can be used in our routine practice. As very few studies are available in our region for treatment of bacterial vaginosis there is a need to conduct more studies on probiotics

## Methodology

After approval from ethical committee of hospital, sixty Women admitted or attending the OPD fulfilling the inclusion criteria (Women in the age group of 18-45 years diagnosed as having bacterial vaginosis according to Amsel's criteria.) were selected in the study. Bias was controlled by strictly following the inclusion and exclusion criteria. Unmarried, pregnant and menopausal women, Women with malignancy of

reproductive tract, Immunocompromised women and women with history of severe allergic reactions were excluded.

Procedure was explained to women and informed consent was taken. Data was collected on structurally designed Performa.

Detailed history and examination was done. For Amsel's criteria visual examination of vaginal fluid was done, PH was checked by PH strip, high vaginal swab was taken for direct microscopy for diagnoses of clue cells and fishy amine smell of vaginal fluid was checked after addition of KOH. (alkali). For diagnosis of bacterial vaginosis according to Amsel's criteria three out of four features (thin homogeneous milky white discharge, vaginal PH more than 4.5, clue cells on wet mount microscopy, fishy amine smell) must be present.

Registered subjects were randomly allocated to the study group A&B.

Group A: Probiotic and Antibiotic (Tab Metronidazole 400mg TDS for 7 days and oral probiotic capsules twice daily for 30 days were given)

Group B: Antibiotic alone (Only tab Metronidazole 400mg TDS for 7 days was given)

Women were called after the treatment period (30 days for group A and 7 days for group B) and examination was repeated and all four parameters were checked that whether bacterial vaginosis is cured or not.

Data was collected in form of variables and entered and analyzed on SPSS version.10. Chi-square test was applied to compare efficacy of both drug P-value of less than 0.05 was taken as significant. Effect modifiers like age, clinical features, duration of disease were controlled by stratification.

Descriptive statistics were calculated for both qualitative and quantitative variables. For qualitative variables like microscopy, smell, efficacy of drug frequency and percentages were calculated. For quantitative variables like age and pH, mean and standard deviation was calculated. Qualitative variables were presented through tables and chart.

## Results

A total of 60 cases (30 in each group) fulfilling the inclusion/exclusion criteria were enrolled to compare the efficacy of combined probiotic and antibiotic

therapy with antibiotic therapy alone in treatment of bacterial vaginosis.

Comparison of efficacy of combined probiotic and antibiotic therapy with antibiotic therapy alone in treatment of bacterial vaginosis was recorded as 83.33%(n=25) in Group-A and 36.67%(n=11) in Group-B while remaining 16.67%(n=5) in Group-A and 63.33%(n=19) in Group-B had no effective outcome. (Table I)

**Table No I: Comparison of Efficacy of Combined Probiotic and Antibiotic Therapy with Antibiotic Therapy Alone in Treatment of Bacterial Vaginosis (n=60)**

Efficacy	Group-A (n=30)		Group-B (n=30)	
	No. of patients	%	No. of patients	%
Yes	25	83.33	11	36.67
No	5	16.67	19	63.33
<b>Total</b>	<b>30</b>	<b>100</b>	<b>30</b>	<b>100</b>

P value=0.000

## Discussion

Bacterial vaginosis (BV) is a common cause of malodorous vaginal discharge in women of reproductive age. Metronidazole is a nitroimidazole antimicrobial agent used to manage protozoal infections such as trichomoniasis and anaerobic infections. Efficacy of antibiotics can be increased by addition of probiotics. This study was conducted to find out the new treatment regimens for bacterial vaginosis, as resistance is being developed against the routinely used treatment regimens. If probiotics found to be effective in increasing the efficacy of antibiotics then they can be used in our routine practice.

Comparison of efficacy of combined probiotic and antibiotic therapy with antibiotic therapy alone in treatment of bacterial vaginosis was recorded as 83.33%(n=25) in Group-A and 36.67%(n=11) in Group-B.

Our findings correlate with Menard JP et al<sup>9</sup> study with oral Metronidazole therapy (500mg twice daily for 7 days) plus oral probiotics twice daily for 30 days(1 capsule containing  $10^9$  L. rhamnos GR-I

and  $10^9$  L. reuteri RC -14) showing the significantly increase efficacy compared with oral Metronidazole alone. At 30 days follow up 88% had normal vaginal flora in probiotic group compared to 40% in placebo group.<sup>9</sup>In another randomized trial of 366 women, Ozkinay reported a statistically significant efficacy of combined probiotic and anti-infective treatment.<sup>11</sup> Marconi et al have carried out adjuvant treatment with probiotics containing lactobacilli following treatment with oral metronidazole for 7 days. The cure rates at 6 and 12 months was higher that is >80%.<sup>12</sup> This showed that probiotic treatment also decreases the recurrence of bacterial vaginosis.

Two of the four studies, one involving vaginally administered lactobacilli combined with estriol<sup>13</sup> and the other involving orally administered lactobacilli<sup>14</sup> documented a highly beneficial effect on the resolution of BV at 21–30 days post treatment. In other two studies involving the administration of intravaginal lactobacilli, the probiotic treatment was not significantly better compared with placebo<sup>15</sup> or compared with intravaginal metronidazole gel.<sup>14</sup> The use of probiotics also helps to restore the normal vaginal flora.<sup>16</sup>In another study from Hyderabad India use of oral probiotics showed a significant positive response.<sup>17</sup> The use of probiotics is being studied extensively in order to provide the new and effective treatment regimens for bacterial vaginosis and it is a natural and nontoxic modality of treatment.<sup>18</sup>

As the studies on the use of probiotics for treatment of bacterial vaginosis showed variable results and our study population had a small sample size, we yet not recommend the use of probiotics on routine basis.

But this study is helpful for treatment of bacterial vaginosis with the new treatment regimens. As very few studies are available in our region for treatment of bacterial vaginosis, some other studies on larger sample size are needed to validate our findings.

## Conclusion

We concluded that combined probiotic and antibiotic therapy is more effective than antibiotic therapy alone for the treatment of bacterial vaginosis. Use of probiotics is a new and effective mode of treatment for bacterial vaginosis but more studies on larger scale are required to validate our findings.

## References

1. Yudin MH. Other Infectious conditions. James DK, Steer PJ, Weiner CP, Gonik B. High Risk Pregnancy Management Options. 4th ed. Nottingham: 2011;521-42.
2. Macphree RA, Hummelen R, Bisanz JE, Miller WL, Reid G. Probiotic strategies for the treatment and prevention of bacterial vaginosis. *Expert Opin Pharmacother*. 2010 ;11(18):2985-95.
3. Campos ACC, Murta EFC, Michelin MA, Reis C. Evaluation of Cytokines in Endocervical Secretion and Vaginal pH from Women with Bacterial Vaginosis or Human Papillomavirus. *ISRN Obstet Gynecol*. 2012;2012:342:75.
4. Khan SA, Amir F, Altaf S, Tanveer R. Evaluation of common organisms causing vaginal discharge. *J Ayub Med Coll Abbottabad Apr-Jun 2009*;21(2):90-3.
5. Djukic S, Opavski N, Mijac V, Ranin L. Current knowledge of bacterial vaginosis. *Srp Arh Celok Lek*. 2011 May-JUN;139(5-6):402-8.
6. Kumar N, Behera B, Sagiri SS, Pal K, Ray SS, Roy S. Bacterial vaginosis: Etiology and modalities of treatment-A brief note. *J Pharm Bioallied Sci*. 2011 Oct-Dec;3(4):496-503.
7. Lata I, Pradeep Y, Sujata, Jain A. Estimation of the Incidence of Bacterial Vaginosis and other Vaginal Infection and its Consequences on Maternal / Fetal Outcome in Pregnant Women Attending an Antenatal Clinic in a Tertiary Care Hospital in North India. *Indian J Community Med*. 2010;35(2):285-89.
8. Thulkar J, Kriplani A, Agarwal N. A Comparative study of oral single dose of metronidazole, tinidazole, secnidazole and ornidazole in bacterial vaginosis. *Indian J Pharmacol*. 2012;44(2):243-45.
9. Menard JP. Antibacterial treatment of bacterial vaginosis: Current and emerging therapies. *Int J Womens Health*. 2011;3:295-305.
10. Tomusiak A, Strus M, Heczko PB. Antibiotic resistance of Gardnerella Vaginalis isolated from cases of bacterial vaginosis. *Ginekol Pol*. 2011;82(12):900-4.
11. Ozkinay E, Terek MC, Yayci M, Kaiser R, Grob P, et al. The effectiveness of live lactobacilli in combination with low dose estriol (Gynoflor) to restore the vaginal flora after treatment of vaginal infections. *Bjog*. 2005;112:234-240.
12. Marcone V, Rocca G, Lichtner M, Calzolari E. Long term vaginal administration of lactobacillus rhamnosus as a complementary approach to management of bacterial vaginosis. *Int J Gynaecol Obstet*. 2010;110(3):223-226.
13. Parent D, Bossens M, Bayot D. Therapy of bacterial vaginosis using exogenously-applied Lactobacilli acidophili and a low dose of estriol: a placebo-controlled multicentric clinical trial. *Arzneimittelforschung*. 1996;46(1):68-73.
14. Anukam K, Osazuwa E, Ahonkhai I. Augmentation of antimicrobial metronidazole therapy of bacterial vaginosis with oral probiotic Lactobacillus rhamnosus GR-1 and Lactobacillus reuteri RC-14: randomized, double-blind, placebo controlled trial. *Microbes Infect*. 2004;8(6):1450-4.
15. Eriksson K, Carlsson B, Forsum U, Larsson PG. A double-blind treatment study of bacterial vaginosis with normal vaginal lactobacilli after an open treatment with vaginal clindamycin ovules. *Acta. Derm. Venereol*. 2005;85(1):42-6.
16. Li J, McCormick J, Bocking A, Reid G. Importance of vaginal microbes in reproductive health. *Reprod Sci*. 2012;19(3):235-42.
17. Sudha RM, Maruya AK. Effect of oral supplementation of probiotic capsule UB\_01 BV in the treatment of patients with bacterial vaginosis. *Benef Microbes*. 2012 ;20:1-5.
18. Dover SE, Aroutcheva AA, Faro S, Chikindas ML. Natural antimicrobials and their role in vaginal health: A short review. *Int J Probiotics Prebiotics*. 2008;3:219-30.