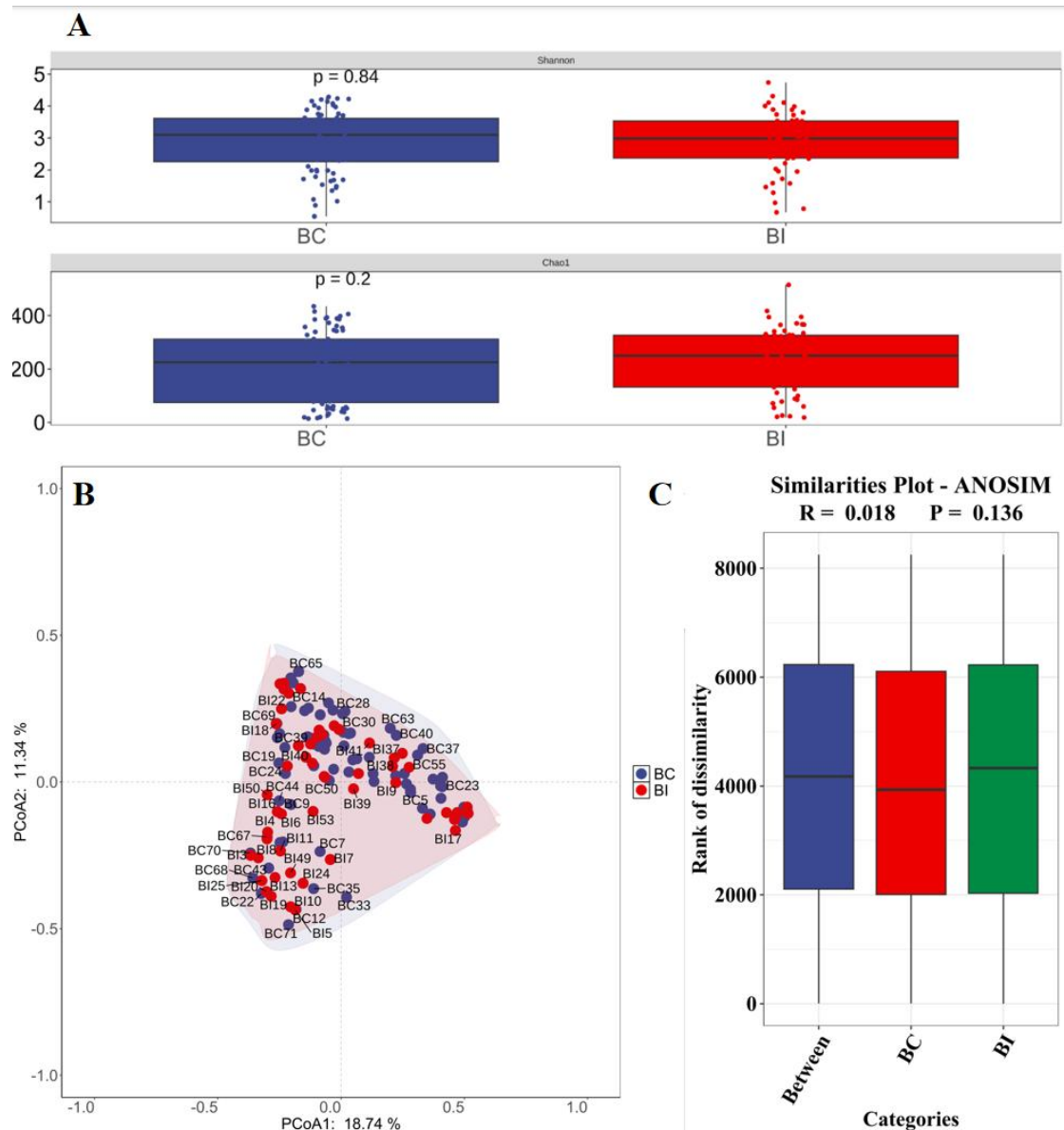




Supplementary Figure S1. Baseline comparison of gut microbiota between the Pre-intervention (BI) and Baseline Control (BC) groups. **(A)** Box plots of alpha diversity indices (Shannon and Chao1) showing no significant differences between BI and BC groups (Wilcoxon rank-sum test, $P > 0.05$). **(B)** Principal Coordinate Analysis (PCoA) plot based on Bray-Curtis dissimilarity, showing overlapping clusters of the two groups at baseline. **(C)** Analysis of Similarities (ANOSIM) confirming no statistically significant difference in community structure ($R=0.018$, $P=0.136$). Boxes represent the interquartile range (IQR), and the center line represents the median.