Meetball (bakso) is a popular meat product in Indonesia. As other meat products, beef bakso has short shelf life at ambient temperature. The objective of this research were observed the effect of antimicrobial substrat as natural preservative on beef bakso at low temperature, which was isolated from Lactobacillus fermentum 2B4. The complete randomize design two factors was used to analyzed the effect of antimicrobial substrat to physical quality of beef bakso. Beef bakso with antimicrobial substrat 50% at 2 and 4 days preservation showed strong activity in inhibit growth of E. coli populations (P<0.05) Key word: beef, meat ball, substrat antimicrobials, microbiologic quality