The correlation between cardiovascular disease and high fat content in meat product composition, has led the meat industry to develop strategies to reduce this component. In this study, the effects of partial replacement of pork back fat by inulin, fructooligosaccharides (FOS) and oat fiber on of low fat bologna sausages were evaluated. Nine different treatments were employed reducing pork back fat (20 to 10%): Control HF (20% pork back fat); Control LF (10% pork back fat); F1 (10% pork back fat and 3% inulin); F2 (10% pork back fat and 6% inulin); F3 (10% pork back fat and 3% FOS); F4 (10% pork back fat and 6% FOS); F5 (10% pork back fat, 3% inulin and 3% FOS); F6 (10% pork back fat and 3% oat fiber) and F7 (10% pork back fat, 1.5% inulin, 1.5% FOS and 3% oat fiber). The products were analyzed regarding pH, activity water and color (L*, a*, b*) along refrigerated storage time (60 days, each 15 days). pH and Aw values were not influenced by different fibers addition as fat substitute at zero time and along refrigerated storage time. FOS (3 and 6%) addition resulted in highest yellowness values than controls and. At 3% FOS addition, the frankfurters presented highest (p < 0.05) redness. Despite the influence of fiber addition on color attributes, mix of soluble and insoluble fiber can be used to reduce fat in meat emulsified products.