Samples were randomly obtained at various stages in the process and subjected to a variety of tests. Of interest were volume change, shrinkage, fat, moisture, free water, texture, color, total nitrogen, and hydroxyproline content.

There was no significant difference in shrink ($P>.1$) between bologna containing 0 percent and 10 percent collagen levels.

Table 1: Mean shrink values for 0 and 10 percent collagen levels.

0%	10%	Std. deviation of treatment means (%)
7.19	7.59	0.84

The Effect of Exposure of Heifer Calves to *Staphylococcus aureus* on the Incidence of Mastitis at First Calving

P.B. Barto and L.J. Bush

Newborn Holstein, Ayrshire and Jersey heifer calves from dams free of Staphylococcal udder infections were divided into two treatment groups. One group was fed a *Staph. aureus* culture (Newbold Strain #305) in milk twice a week for a total of nine feedings, and the other group served as controls. Quarter milk samples collected within the first few days after first calving were cultured on blood agar for enumeration of mastitis-causing organisms. The incidence of Staphylococcal udder infection present in the treated group at the beginning of the first lactation was compared with that in the untreated control group.

The experiment was replicated by using calves born in the OSU herd on two successive years. The first replication of heifer calves consisted of 21 treated and 21 controls. Death loss and culling reduced the numbers to 16 in each group. Of these, 21 were bred to calve during the summer when they were about 2 years of age. The 11 remaining younger calves, consisting of five treated and six controls, were bred to calve during the following summer at around 2½ years of age. No Staphylococcal infections

were found in the heifers which calved during the first summer. Of those calving the next summer, none in the treated group was infected, but three of the six controls had one or two infected quarters (Table 1).

The second replication of heifer calves born a year later consisted of 22 treated and 24 controls. The number of animals remaining at the time of freshening 2 years later was 13 in the treated group and 19 controls. Two heifers in the treated group were infected in one quarter each and two controls were infected, one in one quarter and one in two quarters (Table 1). Studies are in progress characterizing the *Staph. aureus* isolates from all of the infected animals. Exposure of heifer calves to *Staph. aureus* by feeding milk containing this organism did not result in any increase in incidence of *Staph. aureus* udder infection at the time of first calving.

In addition, five of 10 newborn bull calves from dams free of Staphylococcal udder infection were fed culture in the same manner. The treated and control calves were sacrificed and necropsied from 10 to 14 days after the last culture feeding, which was at about 7 weeks of age. Cultures were prepared from 20 different organs and tissues located externally as well as internally. *Staph. aureus* was not isolated from any of the 10 calves.

Table 1. Infection status of heifers at first calving.

Treatment group	No. of heifers	Heifers calving after 2 yr	Heifers calving after 2½ yr	Total heifers
		—(No. infected/No. cultured)—		
Replication 1				
Treated	21	0/11	0/5	0/16
Control	21	0/10	3/6[a]	3/16
Replication 2				
Treated	22	2/13[b]	_____	2/13
Control	24	2/19[c]	_____	2/19

[a]4 quarters infected.
[b]2 quarters infected.
[c]3 quarters infected.