

# Safer, Better, and Less Cost.



The premium low endotoxin J-5 from California is now available nationwide.

## Introduction

The cell walls of gram negative bacteria (such as E. coli, Salmonella, Pasteurella, etc.) contain endotoxin as an integral structural element. Due to the similarity between these structural endotoxin elements (the so-called “core antigens”) across many families of gram negative bacteria, immunity against one has been shown to confer some immunity against the others. This is the basis for the development of core antigen vaccines such as J-5.

During gram negative bacterial infections, such as coliform mastitis, endotoxin is released from the cell walls, becoming “free endotoxin” which can cause fever, anorexia, depression, shock, abortion, and even death.

Vaccination with a core antigen vaccine raises immunity against endotoxin; antibodies that are made following vaccination bind to and neutralize endotoxin. The use of core antigen vaccines is widely reported to result in less mortality and morbidity from gram negative infections.

## Safety

Endotoxin is also released from bacterial cell walls during the manufacturing of vaccines. Free endotoxin in vaccines can harm cows. Hygieia Biological Laboratories is the only manufacturer which prints the actual value (endotoxin units or “EU” per milliliter) on every label. Here is a comparison with another J-5 product (average of three serials each):

Firm:	Hygieia	Zoetis <sup>1</sup>	Immvac
Vaccine:	J-5 E. coli	J-5 E. coli	ENDOVAC-Bovi®
Average EU/ml	9	5,333	735

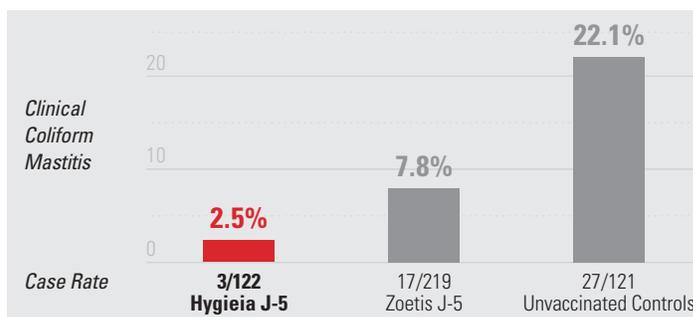
The J-5 produced by Hygieia has far lower levels of free endotoxin than competing products—up to thousands of times lower.

**Lower free endotoxin means increased safety of the vaccine. Hygieia’s J-5 Escherichia Coli Bacterin is the lowest endotoxin core antigen vaccine available.**

None of the other vaccine manufacturers put their product’s free endotoxin level on the label. Now you know why.

## Efficacy

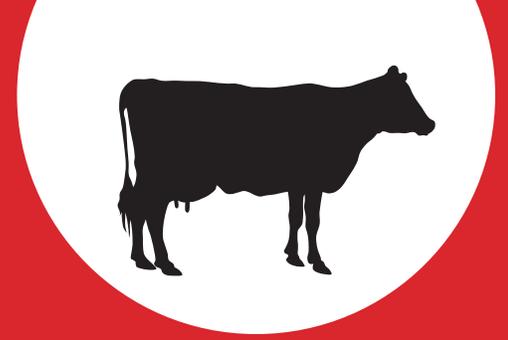
Hygieia’s J-5 was compared to the Upjohn [now Zoetis] J-5 in field efficacy trials. Commercial Holsteins were vaccinated according to label (at seven and eight months gestation, and after freshening), then followed for one lactation during which exposure to coliform bacteria was from the environment. While the Upjohn J-5 vaccine showed a 65% decrease in clinical cases of coliform mastitis, the Hygieia J-5 vaccine showed an 89% decrease in clinical cases of coliform mastitis:



In other words, Hygieia vaccinated cows experienced *less than one-third* the coliform mastitis that the Upjohn vaccinates experienced, and only about *one-ninth* of the mastitis seen in the unvaccinated cows.

In an intra-mammary challenge study<sup>3</sup> researchers examined the performance of the Pharmacia/Upjohn [Zoetis] J-5 compared to a control group.

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In that study, 8 cows were vaccinated with Zoetis J-5 vaccine according to the label. While the vaccine group showed increased antibody titers compared to titers in the control group, the vaccinated titers were not statistically higher until 30 days post-calving; at that point, the Zoetis J-5 vaccinated cows exhibited higher titers. Cows were challenged with a mild *E. coli* into one mammary gland at 14 – 30 days post-calving. Interestingly, the researchers made the following finding with respect to vaccine efficacy: **“Immunization with the [Zoetis] J-5 bacterin” ... “did not influence severity of clinical symptoms following intra-mammary challenge.”** In other words, the Zoetis J-5 group experienced the same severity and amount of mastitis as the unvaccinated controls in this study.

Hygieia’s J-5 has also been tested in intra-mammary challenge studies, however, rather than using a mild strain of *E. coli* for challenge, Hygieia used a highly virulent field isolate in this study. Seventy-five percent of unvaccinated controls developed moderate to severe mastitis (including one abortion and five dry quarters) compared to eleven percent in the Hygieia J-5 vaccinated group (with no abortions, and no dry quarters):

Mastitis:	No Mastitis	Mild	Moderate	Severe
Vaccinates (n=18)	16.7%	72.2%	5.6%	5.6%
Controls (n=8)	0%	25%	62.5%	12.5%

In this more stringent intra-mammary challenge study, Hygieia J-5 vaccinates experienced much less severe clinical symptoms than unvaccinated controls.

Hygieia’s J-5 performed better in preventing clinical coliform mastitis cases under field conditions than the Upjohn J-5 vaccine in one study. It also protected cows against a virulent challenge strain in an intra-mammary challenge study. The [Zoetis] J-5 vaccine was no different than unvaccinated animals in the prevention of clinical symptoms of coliform mastitis following mild challenge. **Hygieia’s J-5 vaccine is the better vaccine.**

### Less Cost

Hygieia’s J-5 Escherichia Coli Bacterin has consistently been priced less than competing core antigen vaccines. And, it has no requirement for milk withdrawal.

### Bottom Line

- A measurably lower endotoxin and therefore safer product
- Superior effectiveness in both field challenge and intra-mammary challenge studies
- Twenty-two years in the marketplace
- Multiple millions of doses sold
- Typically less cost than other J-5 vaccines
- No milk withdrawal
- Plainly a premium product for your dairy

Learn more at: [hygieialabs.com/j-5.html](http://hygieialabs.com/j-5.html).

<sup>1</sup> This vaccine is the original Upjohn J-5, which became the Pharmacia/Upjohn product, then Pfizer’s, and is now the Zoetis J-5 bacterin.

<sup>2</sup> CM = coliform mastitis, *E. coli* isolated.

<sup>3</sup> Tomita, et al, 2000, Journal of Dairy Science 83:2276-2281.