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OPTIWEAN® PROGRAM FACTS

- Two-phase approach to meet the calf's changing immune competence.
- Natural ingredients to support gut health and development.
- Enhanced immune support for overall animal health and productivity.

► Program Description:

Optiwean is an all-natural, highly concentrated family of products formulated for two-phase calf immune support. The biologically active compounds from these natural sources have well-established benefits to improve gut health, reduce pathogen and protozoa loads, enhance immune responses and stimulate growth of beneficial gut microbes. By combining multiple technologies into the Optiwean program, calves receive continuous protection from the many health challenges they face. To best meet the calf's changing immune status, include Optiwean Phase 1 for the first two to three weeks of life. Switch to Phase 2 through weaning.

Phase 1 In Phase 1, a key component is egg-derived antibodies. Egg antibodies can provide crucial passive immunity to common diseases after colostrum antibodies have dropped off and before the calf's own immune system kicks in. (Figure 1). The antibodies present in Optiwean Phase I are listed in Table 1.

Phase 2 As the calf's adaptive immune system kicks in, she is ready to switch to Optiwean Phase 2. Here, the egg antibodies are replaced with algal beta glucan. Beta glucan is a very effective immune modulator, resulting in improved antibody production as the calf's immune system develops.

► Modes of Action:

Citrus extract – Citrus extract serves as a highly effective prebiotic, providing a preferred source of complex carbohydrates for beneficial bacteria in the calf's gut. Citrus extract has been shown to be more effective than essential oils, organic acids and soluble fibers. (Figure 2).

Sarsaponin – Derived from the Yucca cactus, sarsaponin disrupts protozoa cell membranes, reducing the challenges young calves face from *Cryptosporidium* and Coccidiosis.

Bacillus subtilis – Specifically targets *Clostridia* to reduce digestive upsets and restore gut equilibrium for improved digestibility and nutrient absorption in Phase 1.

Manan Oligosaccharide (MOS) –

The MOS component of the Optiwean program provides effective pathogen-binding in the GI tract. (Figure 3).

Egg Antibodies – Derived from the eggs of hens vaccinated against specific calfhood diseases. These provide passive immunity at a critical time.

Figure 1 Passive Immunity From Egg Antibodies

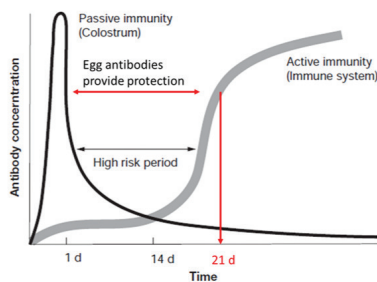


Figure 2 Growth Rates of *Lactobacillus acidophilus* by Nutrient Supply

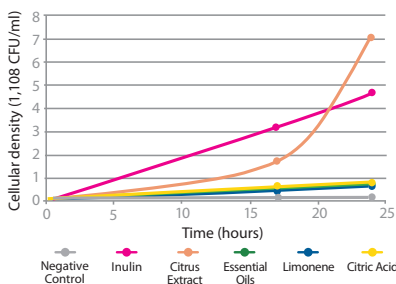


Figure 3 Binding Effectiveness Against Pathogens

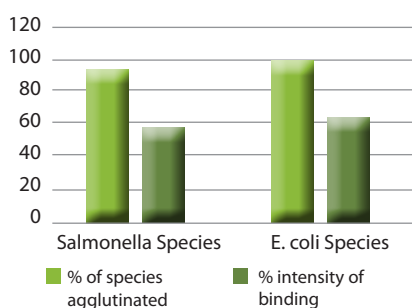
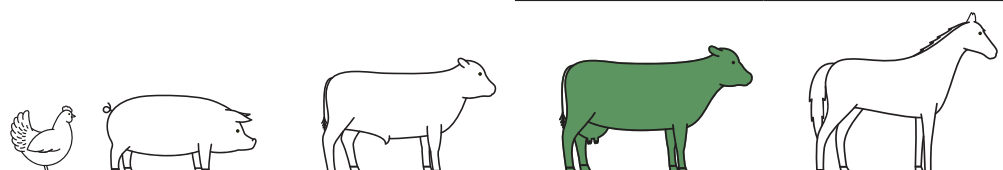


Table 1: Egg Antibodies in Optiwean Phase 1	
<i>E. coli</i> : K88, K99, 987P, F41P & J5	<i>Salmonella</i> : typhimurium, choleraesuis, enteritidis, heidelberg, newport & dublin
<i>Clostridium</i> perfringens Types A, C & D	<i>Bovine Rotavirus</i> , Group A & C
<i>Campylobacter</i> fetus-jejuni	<i>Bovine Coronavirus</i>
<i>Cryptosporidium</i> parvum	



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OPTIWEAN® PROGRAM

The Optiwean Program is an all-natural, highly concentrated product family formulated with egg antibodies and *Bacillus subtilis* (Phase 1), *Saccharomyces cerevisiae* cell wall, dried citrus pulp, lemon extract, algal beta glucan and *Yucca schidigera* extract. Optiwean is designed to be used as a supplement for complete diets for dairy calves. The biologically active compounds from these natural sources have well-established benefits to improve gut health, reduce pathogen and protozoa loads, enhance immune responses and support healthy gut development.



Phase 1

- ▶ **Ingredient Composition:** Spray-dried whole eggs, hydrolyzed yeast, dried citrus pulp, lemon extract, *Yucca schidigera* extract and *Bacillus subtilis* fermentation product.
- ▶ **Feeding Directions:**
To be included in complete diets as described below, or as recommended by your nutritionist.
First 2 – 3 weeks of life: Add 3g to milk for each calf per day.
- ▶ **Density:** 25-30 lb/cu ft
- ▶ **Appearance:** Light yellow, free-flowing powder
- ▶ **Packaging:** Black, 3kg zip-top pouch
- ▶ **Shelf Life:** Two years from date of manufacture when stored in a cool, dry place in the original package
- ▶ **Precautions:** Use only as directed

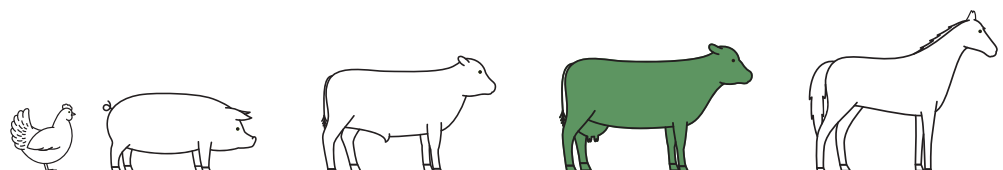
Guaranteed Analysis:		Phase 1
Crude protein	not less than	21.0%
Crude fat	not less than	6.6%
Crude fiber	not more than	1.0%
Moisture	not more than	14.0%
Ash	not more than	11.0%

Phase 2

- ▶ **Ingredient Composition:** Hydrolyzed yeast, dried citrus pulp, lemon extract, plant protein product and *Yucca schidigera* extract.
- ▶ **Feeding Directions:**
To be included in complete diets as described below, or as recommended by your nutritionist. Through weaning: Add 2g to milk for each calf per day or 7lbs. per ton of milk replacer.
- ▶ **Density:** 31-34 lb/cu ft
- ▶ **Appearance:** Light tan, free-flowing powder
- ▶ **Packaging:** Tan, 3kg zip-top pouch or 25 kg bag
- ▶ **Shelf Life:** Two years from date of manufacture when stored in a cool, dry place in the original package
- ▶ **Precautions:** Use only as directed

Guaranteed Analysis:		Phase 2
Crude protein	not less than	20.0%
Crude fat	not less than	0.5%
Crude fiber	not more than	7.0%
Moisture	not more than	11.0%
Ash	not more than	12.0%

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