


BVS PULTRY

Best Veterinary Solutions, Inc.

Spring 2013



Talk

Willmar, MN

325 Lakeland Drive NE • P.O. Box 266
Willmar, MN 56201
320-235-8611 or 1-800-533-1899
Fax 320-235-8629

Ellsworth, IA

1716 Detroit
Ellsworth, IA 50075
888-378-4045
Fax 515-836-4464

Washington, IN

1854 Waller Drive
Washington, IN 47501
877-254-3410
Fax 812-254-2337

Manheim, PA

55 Doe Run Road
Suite 102
Manheim, PA 17665
877-257-4630

Dagsboro, DE

30124 Country Gardens Blvd.
Suite G2
Dagsboro, DE 19939
877-732-3894

CONTENTS

BVS Private Label Products.....	2
PWT pH Water Treatment.....	5
Intervet Schering-Plough Products.....	6-7
Spray Vac Spectrum.....	8
Getting Water Vaccination Right the First Time.....	9
Biosupreme.....	10
INNOVAX®-ILT Vaccine.....	11
Vaxxitek®.....	12
ARKO Labs.....	13
Barnes Paper.....	13
Veterinary Feed Directives and Possible New Requirements for Turkey Production.....	14
Assist Natural Products.....	15
Virocid & Kenosan.....	16
Omegamune Gut Start & Gut Pro.....	17
Effects of pH on Selected Bacterial Pathogens.....	18
Omegamune-Plus.....	18
Manage®.....	19
Huvepharma® Products.....	20
Poultry Litter Treatment.....	21
CitriStim.....	22-23
LiphaTech FastDraw®/Revolver™.....	24
Coccivac.....	25
Cover Your Salmonella Enteritidis Bases with Bron-Newcavac®-SE.....	26-27
CID 2000 vs. Proxy-Clean or CID Clean.....	28-29
Bayer.....	30
Pro-Oxine® (AH) Disinfecting Solution.....	31
The Rodenticide Evolution.....	32-35

MEETINGS & EVENTS:

March 12-14, 2013

MPF Convention
Saint Paul RiverCentre
Saint Paul, MN

June 19-21, 2013

MTGA Summer Meeting
Grand View Lodge
Nisswa, MN

July 2013 (dates TBA)

NTF Summer Leadership Conference
Washington Court Hotel
Washington D.C.

www.bestvetsolutions.com

Managing the Environment to Improve Vaccination Results

By John Menges

jmenges@bestvetsolutions.com

How many times have birds been vaccinated only to break with the exact same disease we want to protect against? Vaccination administration technique is extremely important when vaccinating turkeys and chickens. Vaccine manufacturers go to great lengths to develop and publish vaccination procedures including handling the vaccine prior to administration as well as administration of vaccine. However, second to these critical procedures is making sure the bird is prepared to accept the vaccine and is able to handle any subsequent reaction. One management tool that we have at our fingertips to help ensure this is environmental control that the birds are living in.

All managers and producers understand the importance of providing and maintaining a healthy environment for poultry to optimize the genetic potential of the birds. But, do we think about how important the environment is in allowing our vaccinations to be successful? A significant amount of time, effort and money is invested in vaccinating poultry against various diseases for performance and food safety related reasons. We need to remember that a poor environment will have the same negative impact on the success of vaccination as it does bird performance and health. The fact is the two are directly related. The best chicken or turkey to vaccinate is one that is healthy.

Environmental factors that impact bird performance include temperature, humidity, carbon gas levels, and ammonia. All these factors can have an impact on litter quality, gut health, the respiratory system and the skeletal system of poultry. If birds are not comfortable, they will not consume feed and water, which stresses the immune system and renders vaccination ineffective. Wet litter can be one of the most costly environmental conditions that can occur in a poultry barn, both from a financial and bird comfort/animal welfare standpoint.

continued on page 3

BVS

has manufactured, branded
and private-labeled water
soluble vitamins and
nutritional supplements!

MANAGE[®]

Get into the Manage Zone
Contains Buffered Acids
Plus Copper.

Omegamune[®]

Omegamune[®] Plus

Omegamune[®] GutPro

Omegamune[®] GutStart

Acid SOL

Water acidifier without copper

Starter Pak

*New improved highly concentrated
vitamins with citric acid*

Vita Pak[®]

*Highly concentrated vitamins
& electrolytes*

Solulyte

Balanced Electrolytes

Organic Iodine

Vitamin E

Dry Cider Vinegar

Citric Acid 410

Acidified Copper

Vitamin B Complex

Poultry Talk

We've just finished up from having an excellent IPE Show in Atlanta. It was probably the best one that I can remember in all of the years that Wes and I have been attending. We had a lot more of our U.S. customers there, which made for some very good meetings between them and our sales people. Along with that we had some very good meetings with our suppliers.

Speaking of sales people Gene Burkett our salesman in PA for the past six years retired at the end of December. We wish Gene all the best in his retirement. With that said, we are happy to announce that John Menges has joined our sales force and will be taking Gene's place. John will be covering the NE U.S., PA, the Virginia's, and the Carolina's for us. John has a great background in the turkey industry and is a great asset for BVS and our customers.

Also, coming out of retirement to help us with the commercial layer accounts in the Midwest is Gil Warriner. Gil is highly respected for the work that he has done with the commercial layer people over the years and we are fortunate to have him as part of our sales team!

The MPF Show is right around the corner and we are preparing for another great show! We are in the same spot as always and look forward to seeing all of you there. We will have our Hospitality Night again on Wednesday evening March 13th from 5-9 p.m. at the top of the Crowne Plaza. We are looking forward to seeing all of you there!

Till next time and God bless!

Randy



Visit us at: www.bestvetsolutions.com

Managing the Environment, *continued from cover*

Turkeys or chickens that develop low-grade enteritis can quickly increase litter moisture to an unacceptable level. Increased litter moisture can then negatively affect air quality and can provide favorable conditions for pathogenic microorganisms to proliferate. This has a negative impact on bird performance which is recognized as poor feed conversion, weight gain, flock uniformity, poor carcass quality (including breast blisters and buttons), and footpad dermatitis. In addition to the performance issues mentioned, there is also a higher energy cost related to reducing the environmental impact.

Poor environment and litter condition invariably exacerbate one another – birds remain “loose”, environment moisture continues to rise, which stresses the birds, reduces their resistance and increases the severity of the enteric problems. Any time we stress the immune system, vaccination to boost this stressed system will be difficult. As managers, we need to understand why this is occurring in order to determine what environmental management techniques would be most appropriate to stop this additional stress. Conditions that lead to wet litter and poor air quality will be examined.

Poultry affected with enteritis (the level of enteritis can be low grade to severe) will go through the following progression –

1. Birds become loose because bacterial enteritis compromises absorption and increases mucous production. The litter becomes wet due to loose and/or splotchy droppings. The litter and barn moisture levels elevate causing the formation of ammonia (bacteria, water, and heat) and the relative humidity in the barn increases. Birds are stressed and there is increased potential for other disease challenges (respiratory

challenges can result in airsacculitis, secondary E.Coli infections, etc.).

2. Feed conversion will go up as the bird needs to increase nutrient uptake to compensate for poor absorption.
3. Body weights start to drop and uniformity is negatively impacted as the problem becomes more severe.

Effects of ventilation on barn environment and litter conditions

Cold weather ventilation is most critical in controlling litter condition, carbon gases, ammonia, humidity and barn environment. Typically during cold weather, ventilation rates are reduced to maintain adequate temperatures to keep birds comfortable while saving on propane. As energy prices increase, the fuel used to keep birds comfortable becomes more critical. This fuel is not limited to the propane but also includes the feed energy that birds consume. Most managers understand that if the barn temperature is too cold, birds will consume energy to stay warm rather than put on weight resulting in higher feed conversions. Not only is whole barn temperature critical in cold weather, but temperature uniformity from end to end and side to side within the barn can mean the difference between birds eating for body gain or eating and huddling for survival. When birds eat for survival or “binge eat” to stay comfortable, the enteritis conditions explained in the previous section can be the result. Therefore, it is critical to maintain proper air flow and temperature throughout the barn during the entire growing cycle.

When it comes to ventilating poultry barns during cold weather, 95% of the time we are primarily trying to manage barn/litter moisture levels (Czarick, 2010), or the humidity. It is well

understood that excess litter moisture can lead to ammonia, bacteria/pathogen build up, and leg issues. In addition to enteritis and digestive issues discussed in the previous section, we need to understand where the moisture is produced in a barn.

Table 1 (see page 4) shows the amount of water produced by turkeys by week of age. In general, for every 1 pound of feed intake, a bird will drink approximately 2 pounds of water. Based on this observation, approximately 80% of the water (moisture) ends up in the litter or in the air. This moisture must be removed from the barn in order to maintain litter and acceptable humidity levels by replacing the warm damp air in the barn with cold dry air from outside the barn, without chilling the birds and wasting fuel.

One of the most efficient methods for removing moisture in poultry barns is through negative pressure/minimum ventilation. Exhaust fans and inlets are designed to create a negative pressure in the barn, allowing the moisture to be removed (controlled), while at the same time conserving fuel and using the heat produced by the birds and heaters/stoves. Proper minimum ventilation starts with a tight barn with little air leakage, so that all air enters the barn through the designed inlets. When this occurs and the correct static pressure can be achieved, and the incoming cold air can mix with the warm moist air concentrated at the ceiling (warm air rises and cold air falls). This accomplishes two goals. First, the cold air does not drop directly on the floor resulting in birds that are chilled (leads to huddling and binge eating), it does not allow condensation on the floor from the cold air, and it reduces the amount of heat required to warm the incoming cold air. Second, the warm air at the ceiling tempers the incoming cold air, expanding this air, allowing it to increase its water holding capacity. When air is warmed by 20°F, the water

continued on page 4

Managing the Environment, continued from page 3

Table 1.

Bird Age Week	Tom weight lb	Respireable Moisture	Feces Moisture
		lb H ₂ O hr/bird	lb H ₂ O hr/bird
1	0.3	0.00099	0.00057
2	0.9	0.00268	0.00171
3	1.7	0.00458	0.00323
4	2.9	0.00708	0.01033
5	4.4	0.00971	0.01332
6	6.1	0.01219	0.01520
7	8.0	0.01446	0.01779
8	10.1	0.01652	0.01975
9	12.3	0.01820	0.02300
10	14.7	0.01968	0.02618
11	17.3	0.02096	0.02929
12	19.9	0.02182	0.03198
13	22.5	0.02467	0.03526
14	25.3	0.02774	0.03863
15	28.0	0.03070	0.03713
16	30.7	0.03366	0.03454
17	33.4	0.03662	0.03382
18	36.0	0.03947	0.03230
19	38.5	0.04221	0.03022
20	40.9	0.04484	0.02739
21	43.1	0.04725	0.02655
22	45.2	0.04955	0.02664
23	47.1	0.05164	0.02649

Adapted from Janna, K.A. and L.D. Jacobson, 2003. "Poultry Ventilation Fundamentals and Air Exchange Rates", University of Minnesota Extension Research.

holding capacity of the same air volume doubles, allowing the exhaust fans to remove this moisture from the barn.

The litter on the floor acts like a sponge. As birds add moisture to the litter, the sponge gets full. This process may take days and can go unnoticed. Once the sponge is full, either through poor digestion, enteritis, poor drinker management, or poor ventilation techniques, the litter is wet and then cakes. We then see the high ammonia condition related to poor air quality, litter burns on footpads, and high humidity levels. Before this occurs, humidity levels can be monitored and maintained to less than 65%, in most cases, and will alert managers

when minimum ventilation rates are insufficient to remove excess moisture. There are tables available to be used as a guideline for minimum ventilation capacities, based on bird age, water consumption, and indoor and outdoor temperature and humidity levels (www.poultryventilation.com or www.poultryhouse.com). During warm weather, ventilation to remove moisture is not a problem as temperature is the major concern and ventilation rates are high. Litter can be caked due to enteric issues at this time.

Effects of carbon gases on metabolism and vaccination

Turkeys, especially, are vulnerable

to elevated Carbon Monoxide (CO) and Carbon Dioxide (CO₂) levels. CO levels greater than 25 ppm has been documented to increase cardiomyopathy (round heart) and negatively impact metabolism in young poult (Dr. Dave Frame, University of Utah, 2010). He also found that CO₂ levels above 2,500 ppm created the same result. Research by Dr. Vern Christensen (Journal of Appl. Poultry Res. 4:249-253) supports the negative impact on the thyroid for young poult. Dr. Christensen noted that during the study, all poult fell asleep immediately when exposed to this level, resulting in lower feed intake. When this occurs due to poor air quality, turkey poult will become listless, not feed regularly and huddle – resulting in the potential for disturbed cecal flora and eventual enteritis.

Poult that are vaccinated at the hatchery against diseases like cocci and Bordetella will not respond sufficiently to vaccination, resulting in potential failure, if exposed to the issues noted above. Chicks exposed to poor environment will also show similar issues to vaccination.

Conclusions

Environmental management of commercial poultry is certainly a topic that encompasses volumes of information. When evaluating vaccination of poultry, it is important to not only consider vaccine handling and administration, but we must also look at the environmental conditions of the barn to ensure the birds are ready to accept the vaccine by reducing potential stress.

References

Czarick, M, 2010. "Ventilating Turkey Houses During Cold Weather", Midwest Poultry Show, St. Paul, MN.

Janna, K.A. and L.D. Jacobson, 2003. "Poultry Ventilation Fundamentals and Air Exchange Rates", University of Minnesota Extension Research.



MAKE EVERY DROP COUNT



BOOST BIRD PERFORMANCE WHILE CLEANING WATER LINES WITH PWT®.

When used throughout the entire flock, water infused with the one-two punch of PWT® increases consumption for improved performance while simplifying waterline management. Call 1-888-858-4425 today to get clear, bottom line results in every drop.



Manufactured in the U.S.A. by Jones-Hamilton Co. • 30354 Tracy Road, Walbridge, OH 43465 • www.jones-hamilton.com

PWT is a registered trademark of the Jones-Hamilton company in the U.S. and other countries.

INNOVAX®-ND

TSP-V-048278 2000 dose ampules
TSP-V-116951 4000 dose ampules

Marek's Disease - Newcastle Disease Vaccine
(Serotype 3, Live Virus, Live Marek's Disease Vector)

INNOVAX®-ND is a frozen, live, cell-associated Newcastle disease (ND) and Marek's disease (MD) vaccine. It provides proven protection against virulent NDV and MD. It is approved for *in ovo* injection of 18-day embryonated eggs.



Advantages:

- Provides extended protection for virulent ND and MD
- Offers effective protection in the face of NDV maternal antibodies
- Replaces a conventional live ND vaccination program in the absence of exotic ND
- Removes the potential for respiratory reactions due to live ND vaccines
- Allows the use of monovalent infectious bronchitis (IB) vaccines, improving IB protection

NEWHATCH-C2®

TSP-V-053805 10,000 dose vials

Newcastle Vaccine

(B₁ Type, C2 Strain, Live Virus)

NEWHATCH-C2® is the patented, virtually nonreactive C2 strain of B₁ Type Newcastle disease (ND) virus. It is a lyophilized vaccine approved for spray vaccination of chickens one day-of-age or older for protection against Newcastle disease.

Advantages:

- Effective against field challenge of Newcastle disease virus
- C2 strain of B₁ Type Newcastle minimizes reaction to one day-of-age vaccination in broiler chicks
- NEWHATCH-C2 eliminates problems with lingering hatchery reaction prior to field boost
- Safe to use for hatchery application



ORALVAX-HE®

TSP-V-065396 5 x 2000 dose vials
TSP-V-065398 5 x 5000 dose vials

Hemorrhagic Enteritis Vaccine (Live Virus)

ORALVAX-HE® vaccine is a high titer vaccine that safely protects turkeys 6 weeks of age or older against the immuno-suppressive effects and death losses caused by hemorrhagic enteritis.

Advantages:

- Safe and efficacious: produced with a stable and avirulent strain of type II avian adenovirus of pheasant origin
- Produced under federal quality control standards, ensuring purity and sterility
- Consistent high potency titers to ensure protection of every vaccinated bird, flock after flock
- Recommended administration at 6 weeks of age or older helps assure no maternal antibody interference



NEWCASTLE CLONED N-79

TSP-V-066953 1000 dose units

Newcastle Disease Vaccine

(B₁ Type, clone-selected LaSota Strain)

(Live Virus, Chicken Embryo Origin)

Newcastle Cloned N-79 is a live virus vaccine of chicken embryo origin containing a clone-selected B₁ Type, LaSota strain Newcastle disease virus. This virus has the ability to stimulate protection against a wide variety of Newcastle field strains while causing a milder reaction, in healthy chickens and turkeys, than other LaSota strain vaccines.

Advantages:

- Clone-selected LaSota strain stimulates strong immunity against Newcastle disease, while producing only mild reactions
- Product of choice for immunization of turkeys against Newcastle disease
- May be used to revaccinate broilers in areas with strong Newcastle disease challenge



BVS is the exclusive distributor and marketer of Schering-Plough turkey vaccines in the U.S.

PM-ONEVAX®-C

TSP-V-065417 1000 dose units

Pasteurella multocida Vaccine

(Avirulent Live Culture, Avian Isolate)

PM-ONEVAX®-C vaccine. The seed culture used to make this vaccine has been laboratory tested for protection of chickens against challenge with the X-73 (Type 1) strain of *P. multocida* and in turkeys against challenge with the P1059 (Type 3) strain of *P. multocida*.

Advantages:

- A temperature sensitive mutant of the CU strain that produces stronger takes than the M-9 strain, but less than the CU strain
- Offers protection against naturally occurring field strains of *P. multocida*
- Easy wing-web administration in broiler breeders, layers and turkey breeders



ART VAX®

TSP-V-065236 1000 dose units

Bordetella avium Vaccine

(Avirulent Live Culture)

ART VAX® vaccine is a live bacterial vaccine containing a chemically induced mutant of *Bordetella avium* which is immunogenic for turkeys when vaccinated by spray cabinet at day of age; then revaccinated in the drinking water at 2 weeks of age.

Advantages:

- Approved for spray administration at day of age followed by drinking water at 2 weeks of age
- Proven efficacy in preventing coryza in turkeys
- Time proven. This vaccine strain has been used effectively in the field for over twenty years
- Mild reaction
- Freeze dried product of proven quality and stability



M-NINEVAX®-C

TSP-V-065378 1000 dose units with diluent and wing-web stabbers

Pasteurella multocida Vaccine

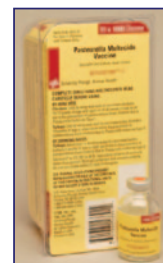
(Avirulent Live Culture, Avian Isolate)

M-NINEVAX®-C vaccine is a live bacterial vaccine containing the mild avirulent M-9 strain of *Pasteurella multocida*, Heddleston Type 3-4 cross, in a freeze-dried preparation sealed under vacuum.

This vaccine strain has been shown to offer protection against fowl cholera in chickens and turkeys. The seed culture used to make this vaccine has been laboratory tested for protection in chickens against *P. multocida* serotype 1 and in turkeys against challenge with *P. multocida* serotype 3.

Advantages:

- Strong protection against *P. multocida* serotype 1 (chickens) and serotype 3 (turkeys)
- Mild. Less reactive than competitive products
- Safe. Avirulent live culture will not revert to virulence, will not cause mortality
- Specially formulated diluent provides excellent reconstitution stability





SPRAY-VAC *Spectrum*



See Spray Vaccination
in a Whole New Light

Learn how at
www.asp-inc.com/spectrum



For more information, contact Animal Science Products, Inc. at 1-936-560-0003.

©2012, Animal Science Products, Inc. All rights reserved.

Getting Water Vaccination Right the First Time, Every Time

By Ross Thoreson and John Menges

Administration of live vaccines through the water is a commonly used technique within the poultry industry. Vaccines are given to healthy flocks on the recommendation of a veterinarian prior to an anticipated challenge and after maternal antibodies are gone. Certain vaccines such as Newcastle Disease Virus, Poul Vac Ecoli or Fowl Cholera can be given by other routes (injection or spray) while Hemorrhagic Enteritis Virus (HEV) vaccine can only be given through water administration. Most turkey flocks will be challenged by HEV after they are moved to the grow out barn. Consequently it is critical that all birds are vaccinated correctly in the brooding barn and have time to develop the necessary antibodies to protect them against the subsequent field challenge. One of the most common consequences to HEV infection is colibacillosis. Many growers who experience E. coli infections have changed their HEV vaccination program from administering a commercial tissue culture vaccine once to administering it twice. In many cases, getting the water vaccination procedure right the first time, every time would eliminate additional costs and stresses on the flock.

Step 1: An effective vaccination program begins with a clean water delivery system, which includes everything from the well to the drinker itself. If the system is not clean and free of biofilm, this will impair the viability of the live vaccine being delivered to the flock and consequently the flock will not develop adequate protection to withstand field challenge. A sound cleaning program of water lines between flocks with an effective product like CID 2000 followed by consistent water sanitation and monitoring program needs to be followed. Chlorine = 700 ORP or above, Chlorine Dioxide = 3 to 5 ppm or Hydrogen Peroxide = 25 to 50 ppm.

Step 2: Prior to vaccine administration, the water delivery system must be prepared to receive a live vaccine and the water quality favorable to keep the vaccine alive until

consumed by the flock. Sanitizing agents such as chlorine, chlorine dioxide or hydrogen peroxide which are harmful to live vaccines must be removed. Use of a commercial vaccine stabilizer which contains a natural reducing agent, a buffer and a coloring agent or dye is highly recommended. Using a non-milk based stabilizer like Vac Pac or Vac Pac Plus (blue dye) is recommended.

Step 3: Finally, each and every bird within the flock must receive a dose of live vaccine. To accomplish this, the flock must be thirsty and consume the vaccine before the vaccine starts to die.. Just dumping the vaccine into the delivery system and hoping each bird gets a drink and therefore vaccinated will not be sufficient.

Below is a step-by-step vaccination procedure that can be followed to improve or maintain good vaccine protection for your flock. It includes recommended times for administering the vaccine. The most important principle to remember is that most flocks consume the largest portion of their daily water intake in the first few hours of daylight.

Therefore, it is advantageous to capitalize on this period to help ensure all birds get a drink of water containing the vaccine.

Vaccination Procedure to Get It Right the First Time

1. Rinse vaccination tank with water. If using a proportioner, ensure that the bucket that the vaccine will be mixed in is clean and has not been used for chlorine or any other type of disinfectant or pesticide.
2. Turn water sanitation off **12** hours prior to anticipated vaccination time.
3. Administer vaccine stabilizer like Vac Pac (use label instructions) after turning off sanitizer - 12 hours prior to vaccination time.
4. Day of vaccination –
 - Flush tank or bucket and pump with fresh water.

- At 5:30 AM, turn the water off to the birds and raise the drinkers so they are unable to drink.
- Fill the tank with the necessary water available to last between two and three hours from the time the vaccine is started until the pump is turned off. Normally, 25-30% of the daily water consumption will be necessary to vaccinate a flock in this time period. This timing allows the vaccine to remain viable in the water system.
- Add vaccine stabilizer like Vac Pac Plus or a stabilizer with blue dye tablets (if the stabilizer does not provide this) to the tank water or bucket if using a proportioner with the necessary vaccine at approximately 7:00 AM (or 1.5 hours after turning the water off to the flock) and begin running the vaccine water to the drinkers.
- Flush the lines until the water at the far end of the system is the color of the vaccine water. Dump any non-vaccine water remaining in the drinkers into a bucket.
- Lower the drinkers back to bird level after all drinkers are blue and allow birds to consume vaccine.
- Encourage birds to consume the vaccine by walking through the house every 15 minutes until vaccine is consumed. Check consumption by looking at individual bird tongues – they should be a lighter shade of the dye color used in the vaccine water.
- Place flock back on water sanitation approximately three hours after vaccinated water is emptied out of tank or the proportioner is empty.

Effectively administering a live vaccine through the water to a healthy flock of turkeys will help improve bird health, livability, flock uniformity and leg issues by preventing secondary E.coli infections.

PRODUCT INFORMATION



BIOSUPREME®

Is a natural feed ingredient for livestock and poultry used to control odors, ammonia and other gas emissions, which can be detrimental to livestock performance. Is a 100% natural product, manufactured from pulverized *Yucca schidigera* plant, which is native to Baja California, Mexico.

Our Food Safety Management System is the most important basic principle in our production and in the marketing of our products. This innocuous process must comply with strict international standards for quality and organic certification as well as an integrated system of checks and balance to assure quality and continuous improvement (HACCP, ISO 22000:2005, GMP+, B2 and B3).

BIOSUPREME is produced by Baja Agro International S.A. de C.V., the only manufacturer of *Yucca schidigera* extract, that harvests the plant in its own ranches and those of its associate farms. This assures the highest quality products offered on the international market.

SPECIFICATIONS

Content	Pure <i>Yucca schidigera</i> ⁽¹⁾ powder
Appearance	Free flowing powder
Color	Light beige
Odor	Sweet
Density	550 – 650 g/L
pH (10% AQ solution)	4.0 ± 0.5
Toxicity	Non toxic
Shelf life	Min 48 months at room temperature
Heat stability	Excellent
pH stability	Excellent
Packaging	55 lbs (25kg) Box

ANIMAL FEED INGREDIENT

APPLICATIONS

Improvement of animal feed

Research in several universities, in addition to many successful trials and studies that have been conducted on farms worldwide, show that the use of *Yucca schidigera* extract in animal feed improves the health conditions of turkeys, broilers, chicken layers, ducks, geese, quails and pheasants by reducing the emission of ammonia and odor.

Synergy

Research indicates that there are additional secondary benefits from inclusion of *Yucca schidigera* extract in feeds, specifically, an increase in animal weight gain and better feed utilization.

Gas reduction

Reduces ammonia and other irritant gases in confined buildings, this creates healthier living conditions, including lower stress levels, helping to improve feed utilization and growth rates.

Odor reduction

Reduces waste odor, creating a better environment for animals, employees, visitors and neighbors.

Economical

Is one of the most cost-effective products to add for improved performance, allowing producers to maximize returns.

SUGGESTED USAGE LEVELS

POULTRY	onces per ton
Turkeys	4 - 16 oz
Boilers	4 - 16 oz
Chicken Layers	4 - 16 oz
Ducks	4 - 16 oz
Geese	4 - 16 oz
Quails	4 - 16 oz
Pheasants	4 - 16 oz



BIOSUPREME® L

FOR USE IN DRINKING WATER

SPECIFICATIONS

Content	<i>Yucca schidigera</i> ⁽¹⁾ concentrate liquid
Appearance	extract
Color	Dark Brown
Odor	Sweet
Density	1.10 ± 0.05 (25° C/25° C)
pH (10% AQ solution)	4.0 ± 0.2
Toxicity	Non toxic
Shelf life	Min 24 months at room temperature
Heat stability	Excellent
pH stability	Excellent
Packaging	2.5 gallons plastic jugs

APPLICATIONS

Animal drinking water

Adding to the drinking water of poultry will reduce the level of ammonia in the animal's digestive track and in the litter thereby reducing the level of ammonia in the poultry houses.

Broiler beds

Spraying over broiler beds will reduce the ammonia and other toxic gases, as well as accelerate the organic matter degradation of the litter.

SUGGESTED USAGE LEVELS

Broiler beds

Spray 6 oz per 1000 square feet twice a week over the litter until odor and toxic emanations are reduced.

Recommendations

The use of **BIOSUPREME L** can be stopped when desired ammonia or odor level is achieved, but it is recommended that **BIOSUPREME** be added in the animal's feed on a continuous basis to reduce noxious ammonia levels.

To obtain an even product distribution, it is recommended to dilute **BIOSUPREME L** in water at a ratio of 10 to 1, or as needed.

Application in animal drinking water

Broilers, turkeys, chicken layer, ducks, geese, quails and pheasants. 8 oz per 1000 gallons of water.

(1) *Yucca schidigera* is approved by the U.S. Food and Drug Administration as a natural food adjuvant under Title 21 CFR 172.510.

(2) Due to the natural composition of the extract, its contents may vary throughout the year; therefore, this is an average approximate analysis.



AGROIN
BAJA AGRO INTERNATIONAL

PRIVADA KINO ESTE No. 100A-1, PARQUE INDUSTRIAL MISION, ENSENADA, BAJA CALIFORNIA, MÉXICO, C.P. 22830
WWW.YUCCA.COM.MX

BAI-HP-BSP-BSLEN-01



A New World of ILT Protection. Without Reactions.

INNOVAX®-ILT Vaccine



Professional producers know that ILT can have a great impact on time, labor and production costs. And most methods of protection against ILT can present other problems for your flock.

But healthy day-old chicks treated with INNOVAX®-ILT show no adverse reaction to the vaccine. Because INNOVAX-ILT does not use conventional live ILT virus, the potential for vaccine induced outbreaks is eliminated.

So protect your flock from ILT without adverse reaction. With INNOVAX-ILT.

For more information, contact your Intervet/Schering-Plough Animal Health sales representative or vaccine distributor.

innovax[®]
ILT

35500 W. 91st Street • De Soto, KS 66018 • intervetusa.com • 800-521-5767 • O&B 9/08 PO-IN-35321

Innovax is a trademark of Intervet Inc. or an affiliate. ©2008 Intervet Inc. All rights reserved.



6 BENEFITS IN 1 SINGLE SHOT

- 1 **INNOVATIVE:** Utilizes modern vectored technology.
- 2 **SAFE:** Does not cause bursal damage¹.
- 3 **EFFECTIVE:** Provides broad-spectrum protection against IBD and MD².
- 4 **EASY TO ADMINISTER:** Administered in ovo or subcutaneously in the hatchery.
- 5 **CONVENIENT:** Single hatchery vaccination eliminates field vaccination.
- 6 **RELIABLE:** Highest quality product and support from the leading MD vaccine manufacturer.

1 Merial Study 05-176MS, data on file
2 Merial Studies rBD/MD-04-97, rBD/MD-05-98, rBD/MD-06-98, rBD/MD-07-98, rBD/MD-10-98, rBD/MD-11-98, rBD/MD-12-98, rBD/MD-13-98, rBD/MD-04-99, rBD/MD-05-99, 98.319, data on file



Value Beyond The Label. Don't Just Choose A Product, Choose A Company.

© 2008 Merial Limited Duluth, Georgia. All rights reserved.

Merial Select
01281H-AD B/K/AI

ARKO LABORATORIES

JEWELL - IOWA

800-714-2756



Waterline delivered turkey vaccines -
Easy Administration!

Visit our website for more information!



HE Vac (1,000 & 5,000 dose)

Ery Vac FD (1,000 dose)

Nitro-Chol (1,000 dose)

Snick Guard (1,000 dose)

Autogenous Vaccines



WWW.ARKOLABS.COM

Barnes Paper

- ✓ "A" & "B" Flute Brooder Guard Feed Paper
- ✓ 12" Water Line Paper
- ✓ Jumbo Corrugated Feed Lids
- ✓ Disposable Feed Lids
- ✓ Red & Gray Plastic Feed Lids
- ✓ Egg Cases and Egg Flats



Veterinary Feed Directives and Possible New Requirements for Turkey Production

Dr. James Skinner, PhD, HUVEPHARMA, INC.

In proposed rules published in the Federal Register (April 13, 2012), a “veterinary feed directive” (VFD) was defined as a written statement issued by a licensed veterinarian in the course of the veterinarian’s professional practice that orders the use of a VFD drug in or on an animal feed. This written statement authorizes the client (the owner of the animal or animals or other caretaker) to obtain and use the VFD drug in or on an animal feed to treat the client’s animals only in accordance with the directions for use approved, conditionally approved, or indexed by the Food and Drug Administration (FDA). In that same issue of the Federal Register, FDA announced the availability of final guidance for industry (GFI) entitled “The Judicious Use of Medically Important Antimicrobial Drugs in Food-Producing Animals” (GFI # 209) and a draft GFI # 213 entitled “New Animal Drugs and New Animal Drug Combination Products Administered in or on Medicated Feed or Drinking Water of Food-Producing Animals: Recommendations for Drug Sponsors for Voluntarily Aligning Product Use Conditions With GFI #209. All stakeholders are interested in the common goal of more judicious use of medically important antimicrobials in poultry production. Implementation of the judicious use practices are scheduled in about two years.

The effects of only approving new antimicrobial drugs as VFD on turkey production are unknown. To date, no drug has been approved as VFD for use in turkeys. The effects of changing the marketing status of currently approved antimicrobial drugs (classified as important to human medicine) from over-the-counter (OTC) to VFD are unknown. More governmental restrictions on any industry normally result in more paper work, reduced efficiency, and higher costs. There are also

unintended consequences of changing production practices and regulations. The turkey industry is working with other stakeholders to minimize these effects.

Many of the animal health products that the turkey industry uses will continue to be marketed OTC. There is no need for products that are not used in human medicine (or important) to be marketed as VFD. Production drugs such as bacitracin, bambermycins, and ractopamine will continue to be used as they are now. Chemical (amprolium and diclazuril) and ionophores (monensin and lasalocid) coccidiostats will continue to be marketed OTC. Preventatives for blackhead, leucocytozoonosis, and cecal worms such as nitarsone, clopidol, and fenbendazole, respectively, will continue to be available OTC. These products do not pose a risk to the development of antibiotic resistance in products important to human medicine.

The tetracyclines (chlortetracycline, oxytetracycline, and neomycin/oxytetracycline) and penicillin are examples of products currently marketed as OTC that will move to VFD. The claims for increased rate of weight gain and improved feed efficiency will be removed from the labels of these drugs as they move to VFD. Production drug claims (growth promotion, increased rate of weight gain, and improved feed efficiency) are not considered judicious uses of drugs critical to human medicine. The Type C feed combinations with the production drug claims will also be lost. The penicillin Type A medicated article only has production drug claims on its label, so if no disease treatment claims are added to the label the product will be lost. There is a popular turkey combination with amprolium, bacitracin zinc plus penicillin for prevention of coccidiosis, treatment of infec-

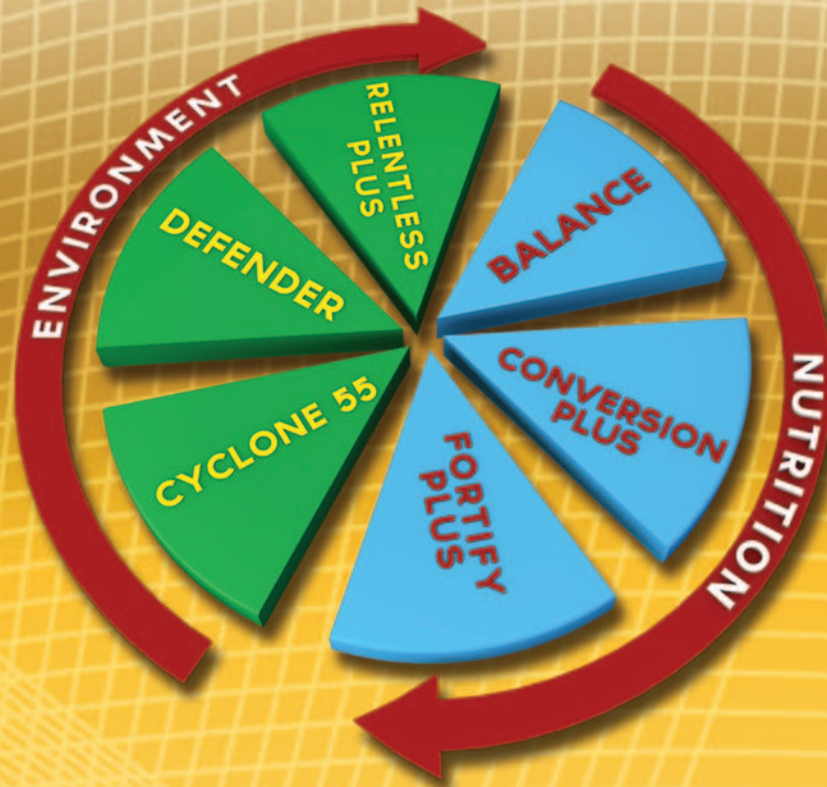
tious sinusitis and bluecomb (mud fever) that will be withdrawn because it cannot be prepared without the penicillin Type A. The withdrawal of this combination may be considered an unintended consequence. The turkey industry has not received any new antibacterial drug approvals in recent years so it is difficult to lose claims, drug combinations, or drugs.

A veterinarian may only issue a VFD drug in feed for the approved, conditionally approved, or indexed conditions of use. Extralabel use of a VFD drug is not permitted. Extralabel use of any drug in medicated feed is not permitted.

The turkey industry has no experience with VFD drugs. Turkey veterinarians and feed manufacturers could visit with their colleagues in the swine and cattle industries who have experience with VFD drugs. Drug sponsors (pioneer and generic) will also be a good source of information on regulatory compliance on the use of their VFD products. The proposed changes in the VFD regulations should help all animal industries.

Turkey owners, feed manufacturers, and veterinarians will have to maintain the VFD documents (currently for two years) and make them available for FDA inspections when requested. A proposed change to the regulation is to reduce the retention time to one year. Creating and maintaining these documents have a cost. The feed manufacturer must notify FDA at the time it first distributes animal feed containing a VFD drug. Someone is also going to pay for the increased numbers of hours of veterinary time that will be required on farms and preparing documents. Yet, the turkey industry will continue to persevere and provide the best medical care possible for its birds within the limits that the law will allow

A PROGRAMMED APPROACH



- ✓ MAXIMIZE FEED CONVERSION
- ✓ INCREASE PAYABLE POUNDS
- ✓ IMPROVE LIVABILITY

- ✓ EXTEND LITTER LIFE
- ✓ CONTROL MOISTURE
- ✓ MANAGE AMMONIA



ASSIST NATURAL PRODUCTS & SERVICES LLC • 218 EVERGREEN DRIVE LENA ILLINOIS, 61048

info@assist-nps.com

**BEHIND A GREAT
DISINFECTANT**

**STANDS A GREAT
CLEANER**



The world's leading disinfectant Virocid has become even more powerful.

Thanks to the extraordinary cleaning power of **Kenosan**, the world's most powerful disinfectant **Virocid** is able to penetrate deeper and disinfect even more thoroughly than you were used to.

Kenosan combines ultra-strong adhesion power and deep penetrating cleaning action at very low dilutions! The high-level formulation guarantees a unique cleaning result in the most heavy-duty circumstances in the pig, poultry and dairy houses. Even the most thick and dried up dirt (manure, litter, etc.) like in farrowing crates, fattening pens, turkey or broiler rearing houses, milking parlours etc. stands no chance against the penetrating and dissolving power of Kenosan. The cleaning action also gets amplified by extended contact time due to the sticky foam that remains attached upon all types of surface.

CID LINES
innovative hygiene solutions

www.cidlines.com

OMEGAMUNE GUT START

- Extremely fortified probiotic for poults and chicks containing 6 strains of live (viable) naturally occurring micro-organisms
- Applied at the hatchery at 1 day of age (Hatch Day) or at placement
- Probiotic is applied with a gel spray diluent to provide better uptake and uniform coverage
- Gel appears as droplets on poults or chicks and is visible and readily picked up by the birds which increases the amount of product getting to the birds and the amount of birds that get the product.
- All droplets are gone within 2 or 3 minutes
- Unlike water spray, the gel spray does not soak the poults / chicks , keeping them dry and warm
- Can easily be mixed with IMMUCOX vaccines for same time application
- Contact your poult / chick supplier and ask them to apply Gut Start on your next order



OMEGAMUNE® GUT PRO POULTRY PROBIOTIC

Contains a source of live (Viable) naturally occurring micro-organisms and stabilizing agents to help contain viability of product through administration.

Use Gut Pro to supply naturally occurring micro-organisms to poultry in the first 1 to 5 days of placement, at periods of unusual stress, before and after moving or after therapeutic antibiotic treatment

DIRECTIONS FOR USE:

For starting birds supply one Gut Pro 4 oz. jar per 5,000 birds in first 8 hours of morning drinking water for 3 consecutive days.

For periods of stress, before and after moving or therapeutic antibiotic treatment supply one 4.0 oz. jar of Gut Pro per 5,000 birds in first 8 hours of morning drinking water as needed.

Turn off chlorine or water sanitizer and neutralize water system with Vaccine Stabilizer before use of Gut Check.

Make sure the entire watering system and stock solution are free of any anti-microbial agents.

GUARANTEE

11.2 billion CFU/gram total lactic acid producing bacteria

11.2 billion CFU/gram Bacillus cultures

INGREDIENTS: Milk products, sodium thiosulfate, magnesium chloride, gelatin hydrolysate, Enterococcus faecium fermentation product, Lactobacillus casei fermentation product, Lactobacillus acidophilus fermentation product, Lactobacillus plantarum fermentation product and Bacillus subtilis fermentation product and Bacillus licheniformis fermentation product, sucrose

Net Weight: 4.0 oz. (113.4 grams)

Manufactured for:

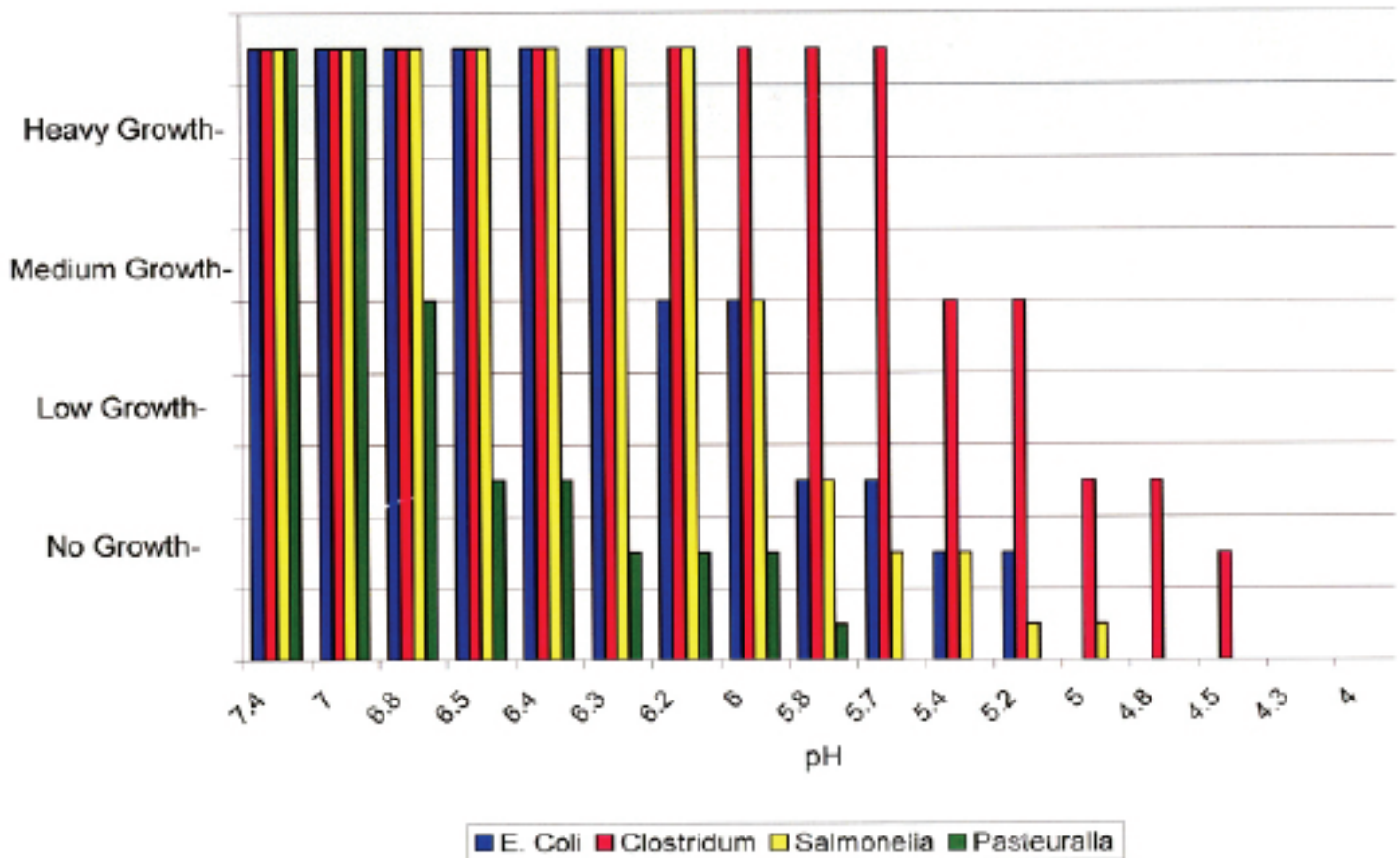
Best Veterinary Solutions, Inc.

Willmar, MN 56201

Best Veterinary Solutions, The Solution Company

Effects of pH on Selected Bacterial Pathogens Growth in Drinkers

Boyd E. Hardin - C.S. Roney, DVM, MAM



OMEGAMUNE-PLUS®

Patent Pending

WITH ANTIOXIDANTS FOR TURKEYS & BROILERS

For Use in Closed Drinking Water Systems for Poultry

GUARANTEED ANALYSIS

CuSO₄.....18%

INGREDIENTS: Copper, Organic Acids, BioSupremeL, Buffers, Dye #40, Extract from Essential Oils.

Omegamune-Plus Precautions

- Acidic solution
- Corrosive to galvanized and mild steel equipment, piping and/or fittings.
- Wear goggles or full face shield when handling
- For animal use only; not for human consumption
- Keep out of the reach of children

WARNING: Follow label directions

MIXING DIRECTIONS

Standard Dosage - 1:1024 gallons drinking water. Administer 1 part Omegamune-Plus in 1024 parts drinking water. For injectors/proportioners administer 1 oz. stock solution per gallon drinking water. Prepare stock solution by mixing 1 gallon Omegamune-Plus with 7 gallons water.

Optimum Dosage - 1:512 gallons drinking water. Administer 1 part Omegamune-Plus in 512 parts drinking water. For injectors/proportioners administer 1 oz. stock solution per gallon drinking water. Prepare stock solution by mixing 1 gallon Omegamune-Plus with 3 gallons water.

Available in the following packaging:

4 x 1 gallon cases.....(Product # 100801)
5 gallon pails.....(Product # 100810)
55 gallon drums.....(Product # 100820)

Manufactured by: **Best Veterinary Solutions, Inc. • Willmar, MN 56201**
1-800-533-1899 • FAX 320-235-8629

"Marketed Exclusively by Best Veterinary Solutions"

Contact the BVS sales representative or distributor in your area for more details.

Get into the Zone

The Manage® Zone

Dietary Agent for Poultry and Swine

- ✓ is considered GRAS (generally recognized as safe).
- ✓ has a pH of 1.3.
- ✓ when mixed at recommended levels will reduce drinking water to pH 3.5-5.5.
- ✓ will hold pH down longer than other commercially available acidifiers.
- ✓ contains higher levels of copper than other liquid copper products on the market.
- ✓ is a dark purple solution that stays in solution without any settling out like that of competitive products.
- ✓ fits well into an antibiotic free program.
- ✓ works very well to maintain waterlines. Prevents scale build up.
- ✓ is friendly to the environment. 40% less copper excreted by using Manage versus feed grade copper.
- ✓ Is the only Patented product of its kind!

The Acid Sol® Zone

Dietary Agent for Poultry and Swine

- ✓ is considered GRAS (generally recognized as safe).
- ✓ has a pH of 1.3.
- ✓ when mixed at recommended levels will reduce drinking water to pH 3.5-5.5.
- ✓ will hold pH down longer than other commercially available acidifiers.
- ✓ is a red solution that stays in solution without any settling out like that of competitive products.
- ✓ fits well into an antibiotic free program.
- ✓ works very well to maintain waterlines.
- ✓ is a combination of buffered acids.
- ✓ contains No copper.

**Marketed
Exclusively by
Best Veterinary
Solutions, Inc.**

Wilmar, MN 56201
800-533-1899
FAX 320-235-8629

Contact the BVS sales representative or distributor in your area for more details, or call 1-800-533-1899.



OUR FAMILY IS
GROWING!

HUVEPHARMA PRODUCTS

- AMPROL 25%
- AMPROL 9.6%
- AMPROL 128
- CLINACOX
- COYDEN
- FLAVOMYCIN
- GAINPRO
- HOSTAZYM C
- HOSTAZYM X
- HOSTAZYM X C
- OPTI-BAC L
- SACOX

NEW, FDA APPROVED!

•**TYLOVET SOLUBLE**



HUVEPHARMA®

We add performance to your business

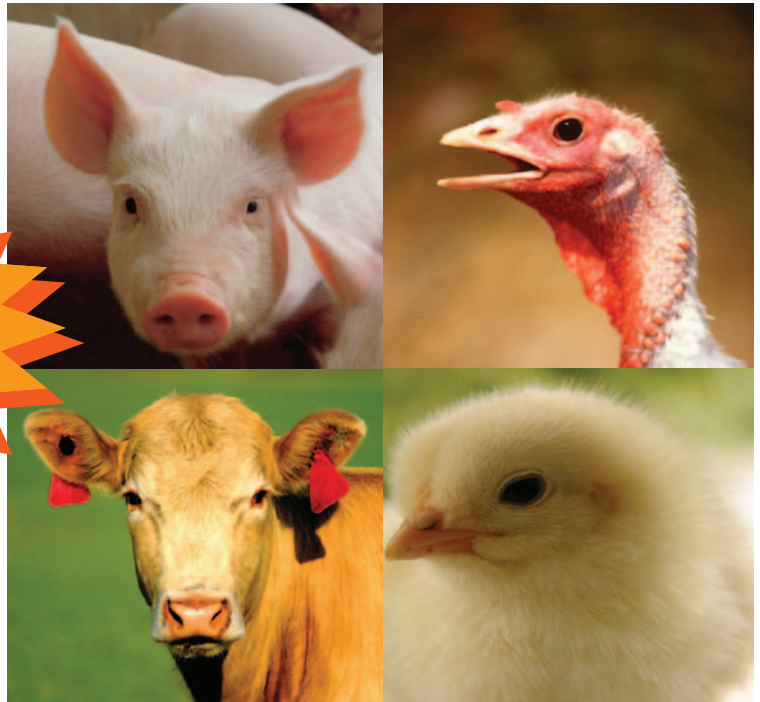
Growing with You!

Thanks to your support,
our business is growing!

Not coincidentally,

*supporting your growing
business is our business!*

We are grateful and proud that
as we work together,
we are able to provide proven
and dependable products
that help our nation's livestock
and poultry producers grow
safer, healthier and more
affordable food.



For more information about Huvepharma products contact customer service
toll free at 877.944.4883 or email customerserviceusa@huvepharma.com

TIP THE SCALES IN YOUR BATTLE TO MAKE WEIGHT



At just 25 PPM, ammonia denies you precious ounces of bird weight. With soaring grain prices, that's a fight you can't afford to lose.

PLT® can push the scale toward great profits by eliminating any ammonia problems that cost you feed conversion, performance and energy. Find answers at www.JonesHamiltonAg.com or contact your territory manager at (888) 858-4425.



**Poultry Litter
Treatment**

The Science of Litter Management™

Manufactured in the U.S.A. by Jones-Hamilton Co.
30354 Tracy Road, Walbridge, OH 43465
www.jones-hamilton.com

PLT is a registered trademark of the Jones-Hamilton company in the U.S. and other countries.



**Unique...just like you
and your operation.**

CitriStim[®], a unique yeast, balances the health and performance of your flock through beneficial immune modulation, research-proven immune benefits and enhanced digestive function.

A unique ADM Yeast (*Pichia guilliermondii*) for immune modulation and pathogen adherence...

CitriStim[®] may help the animal fortify its defense against health challenges.

The yeast component of CitriStim may manipulate pathogens and mediate gut immune activity. The overall result is enhanced performance and an animal that does not easily succumb to daily health challenges. It's an easy addition to diets for all life stages and classes of animals.

Check out our, ***CitriStim Impact on Intestinal Immunity in Poultry***, article in this issue.

***CitriStim has performance-proven
health and production benefits,
now brought to you by:***

Best Veterinary Solutions, Inc.





CitriStim® Impact on Intestinal Immunity in Poultry

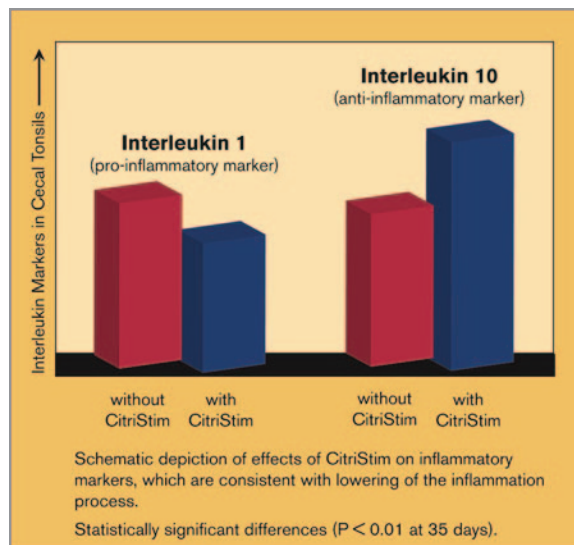
Referee Journal: *Poultry Science* 91: 107-111, 2012

Background:

The study was conducted on broilers to explore the impact of CitriStim on intestinal immunity at the Ohio Agricultural Research and Development Center, The Ohio State University, Wooster, USA. Dr. R. K. Selvaraj was the leader for this research.

Primary conclusions based on the study:

1. The experiments were conducted to determine the impact of CitriStim on intestinal immunity in broilers under laboratory conditions without any external stresses/immune challenges.
2. Since the intestine is a critical organ for immunity, the Regulatory T-cells, CD4+ T cell, and CD8+ T cell percentage in the cecal tonsils of CitriStim-fed-birds were measured. Increased Regulatory T cells, with no decrease in CD4+ and CD8+ T cell percentages, in CitriStim-fed-birds demonstrated that the intestinal immunity is optimal and the bird has an improved level of friendly microflora as a consequence of CitriStim. **In conclusion: the bird is able to use dietary nutrients for production rather than having to use some of the nutrients fighting infection/disease.**
3. Consistent with this balance of response (as described above):
 - a. Interleukin 1, a **pro-inflammatory marker**, was **decreased** in the cecal tonsils of CitriStim-fed-birds. ***This finding is consistent with the reduction of inflammation.***
 - b. Interleukin 10, an **anti-inflammatory marker**, was **increased** in the cecal tonsils of CitriStim-fed-birds.
4. Broilers fed CitriStim at 0.1% of the total diet exhibited a 4% increase in weight gain and 2% improvement in feed efficiency even in light of the absence of external stressors.



WHY GO SOFT ON RODENTS?

BECAUSE IT'S THEIR FAVORITE LAST MEAL.

Q: What is soft bait?

A: *FastDraw* or *Revolver* no-wax rodenticide.

When you purchase an 18 pound pail of red or green wax blocks, you are spending money on approximately 4 pounds of wax filler.



When using *FastDraw* or *Revolver* soft bait, rodents consume 0% wax and you gain 100% control in every bite they take!

FASTDRAW®
FastDraw takes 4-5 days to work.
SOFT BAIT

NEW
Revolver™
SOFT BAIT

 Outperforms red or green wax blocks or pellets

 Low cost per placements

 Fast acceptance & control

 Less bait waste, saving you money

 Will not melt in high temperatures

 Pouches fit in hard to reach places

 Single feed control



FastDraw & *Revolver* soft bait fit in hard to reach places where rodents live and breed.



No wax = no melting and maintaining palatability in hot & cold environments.

Contact your Liphatech District Sales Manager or Best Veterinary Solutions Sales Representative for samples or more information today!

LIPHATECH®

Three Steps...



TO
**Sustainable
Coccidiosis
Protection**



Any Season...Any Size...Any System.

For complete details, contact your Intervet/Schering-Plough Animal Health representative.

Visit us on the web at: **www.ihc-poultry.com**

Coccivac is the property of Intervet International B.V. or affiliated companies or licensors and is protected by copyrights, trademark and other intellectual property laws. Copyright © 2009, Intervet/International B.V. All rights reserved.



Intervet
Schering-Plough Animal Health

Cover Your Salmonella Enteritidis Bases with Bron-Newcavac®-SE

It's no secret that layer operation managers spend a considerable amount of time worrying about *Salmonella enteritidis*. *Salmonella enteritidis* (*S. enteritidis*) presents challenges to egg-laying operations from a business and FDA-compliance stand-point...not to mention the sleep of operation managers.

Commercial egg-laying operators need an effective solution to prevent the occurrence of *S. enteritidis*, safe-guarding against food-borne illness and protecting the health and production of their flocks.

"The U.S. Food and Drug Administration's final guidelines for egg producers, coupled with concerns we hear from our customers, affirms our commitment to developing vaccines that enable operators to effectively protect not only their flocks, but also their businesses and reputations," says Charles Broussard, D.V.M., MAM, Technical Marketing at MAH.

Effective and Compliant *S. Enteritidis* Control

However, while many food-borne illnesses, which were once a major threat to consumers, have been nearly eliminated, *S. enteritidis* continues to be a concern. Flock management practices that include vaccination against *S. enteritidis* can notably reduce the chance of an outbreak.

Bron-Newcavac®-SE from Merck Animal Health is an effective, long-lasting vaccine that helps producers comply with FDA regulations on the prevention of *S. enteritidis*. It's easy on the bird and contributes to strong flock immunity.

"Producers need to know their operation is covered – from compliance, to liability and financial-loss," says Dr. Broussard.

Cover Your Flock for *S. Enteritidis* and Respiratory Diseases

Bron-Newcavac-SE is also effective at controlling the respiratory pathogens causing

Newcastle disease and infectious bronchitis. The three-way protection of the vaccine offers convenient application when administered in chickens ten weeks of age or older.

Egg-laying operators have a few options for *S. Enteritidis* control. Vaccination programs may use live *Salmonella typhimurium* vaccines to induce cross-protection against *S. Enteritidis* or inactivated bacterins. Live vaccination strategies involve multiple field applications, while inactivated bacterins recommend two injections.

Layer operators often select vaccination programs based on cost and ease of application. Long-term efficacy in the face of *S. enteritidis* challenge is the single most important criteria for a vaccination program designed to protect the economic and flock health, as well as the safety of its customers, says Dr. Broussard.

"At Merck, we recognize the seriousness of this disease," says Dr. Broussard. "That's why we are committed to providing poultry operations with solutions to help maintain flock health, and protect consumers against the threat of *Salmonella*."

Merck Animal Health conducted trials to evaluate reduction in *S. enteritidis* growth following experimental inoculation of egg content from vaccinated hens using the following strategies – 1) live *salmonella typhimurium* vaccine, 2) a single bacterin and 3) two bacterin injections. Trial findings included the following:

- Vaccination with Bron-Newcavac-SE inactivated bacterin induced more effective inhibition of *S. enteritidis* growth in egg yolk than the live *salmonella typhimurium* vaccination program.
- The ability of a vaccination program to induce yolk antibody that effectively inhibits *S. enteritidis* growth is a critical indicator of the ability of the program to reduce the risk of *S. enteritidis* contamination of eggs.

Two vaccinations with Bron-Newcavac-SE provided a more effective inhibition of *S. enteritidis* with longer duration than a single

injection. A 100X reduction in *S. enteritidis* colony forming unit (CFU) was measured in pooled yolk samples at the rate of:

- 25 Weeks: 75 percent for double bacterin program versus 25 percent for a single bacterin and zero percent for live-only programs.
- 45 Weeks: 60 percent for double bacterin program versus zero percent for a single bacterin or live-only programs.

The goal of vaccination against *S. enteritidis* is to reduce opportunity for egg contamination that could result in significant food safety concerns. Bron-Newcavac-SE, given in two separate injections, produced the most effective inhibition of *S. enteritidis* growth through 45 weeks of age in commercial egg farms.

Three-way Protection and Convenience

The vaccine also aids in the prevention of signs and lesions associated with Newcastle disease and infectious bronchitis.

Layer operators select Bron-Newcavac-SE as a preferred combination vaccine for *S. enteritidis*, Newcastle disease and IB because:

- It helps producers comply with FDA regulations for the prevention of *S. enteritidis*.
- It is easy on the bird, resulting in better lifetime production and improved flock uniformity.
- It provides long-lasting control for *S. enteritidis*, Newcastle and IB, providing convenient offering to producers.

"Protect your business and your flock investment by using Bron-Newcavac-SE as part of your *S. enteritidis* prevention protocol," says Dr. Broussard.

To learn more about Bron-Newcavac-SE and other poultry health vaccination solutions, call Merck Technical Services at 1-800-211-3573 or visit www.merck-animal-health-usa.com.



IT'S HARD TO FIX A REPUTATION.

When you make Bron-Newcavac™-SE part of your *Salmonella* control protocol, you protect your commercial layer flock, your business and your reputation. For the confidence that comes with long-lasting control, ask your Merck Animal Health representative for Bron-Newcavac-SE. Part of the Merck Poultry program of total bird health.

BronNewcavac™SE

Copyright © 2013 Intervet Inc., a subsidiary of Merck & Co., Inc.
All rights reserved. 19151R BVS



Why Products Like CID 2000 Work Best To Clean and Maintain Water Lines



Most recent studies have shown that using a stabilized peroxide product work the best to clean water line between flocks. However it is important to know what type of peroxide product you are using and why some products work better than others.

Most end users classify all combinations of stabilized peroxide under the same umbrella whether it is a 34% stabilized peroxide or a 50% stabilized peroxide product. Most end users also classify stabilized hydrogen peroxides that are combined with acetic / peracetic acid (peroxyacetic acid) products under the same type of umbrella.

This is where we want to draw the distinction. When comparing straight stabilized peroxide products like Proxy-Clean or Cid Clean to a Peracetic Acid product like Cid 2000 that combines stabilized peroxide and acetic / peracetic acid, products like Cid 2000 are the clear choice to clean and maintain clean water lines.

CID 2000

Since Cid 2000 combines an oxidizer (hydrogen peroxide) with an acid (acetic / peracetic acid) it can remove both organic matter AND descale water lines at the same time.

PROXY-CLEAN or CID CLEAN

Since these products only have an oxidizer (hydrogen peroxide) they can only remove organic matter from your water lines. If you have 'hard water' which usually means high mineral content, iron and / or a high pH you will have scale build up. If you want to descale your water lines you will need to use a separate Acid based product following the use of Proxy-Clean or Cid Clean. This will cost you more time and money.

There are very few places that do not have hard water caused by high mineral content or iron that creates a scale build up issue in your water lines.

WHY YOU CAN NOT IGNORE SCALE

It has been well documented how biofilm is created and how much of a role it has in creating an unfavorable environment for your water lines. However, it is just as if not more important to pay attention to scale / mineral build up in your water lines. Bacteria produce carbohydrates (sugar) that allow them to attach to pipes; minerals also create deposits on the pipes; minerals like Iron also create deposits on the pipes and are used as a nutrient source by the bacteria. Mineral deposits also serve as attachment sites and form a structural matrix with bacteria / biofilm. Dissolving the mineral deposits destabilizes the structural integrity of the biofilm and assist in physical removal of organic matter from water lines and drinking systems. If you ignore the scale buildup you are leaving behind a major vector for bacteria and biofilm attachment and development that will compromise your drinking water.

SYNERGY IS THE KEY

The combination of ingredients in products like Cid 2000 creates a very unique and powerful product. The addition of the Peroxyacetic Acid (PAA) creates a powerful activated peroxygen compound which boosts the hydrogen peroxide oxidation potential 10 to 12 times in products like Cid 2000. Although Cid 2000 type products have less stabilized peroxide by percentage (20%) then products like Proxy-Clean or Cid Clean (50%) the oxidation potential of the peroxide is greater because of the combination of ingredients. This can also be seen in terminal disinfectants. For example products that combine glutaraldehyde and quaternary ammonia are much more powerful and broad spectrum than glutaraldehyde or quaternary ammonia on their own.

This is one of the reasons why products like Cid 2000 can be used at a 2% dilution compared to using products like Proxy-Clean or Cid Clean at a 3% dilution.

CID 2000

Cid 2000 has shown to be effective at a 2% / 1:50 dilution rate. It also has shown to be effective when left in the water lines for 12 to 24 hours depending on your build up. It takes less product and less time to use a product like Cid 2000. Saving you time and money.

PROXY-CLEAN or CID CLEAN

Proxy- Clean or Cid Clean type products have shown to be effective at a 3% / 1:33 dilution rate. These products also need to be left in the water line for 24-48 hours depending on your build up. It takes roughly 30% more product to clean water lines compared to products like Cid 2000 and these type of products only remove organic matter and cannot descale your water lines.

It is important to use these products at the 2% (Cid 2000) or 3% (Proxy-Clean / Cid Clean) dilution rate for them to work the best. Properly using any product plays a huge role is how that product will work on your farm!

Both Cid 2000 and Proxy-Clean or Cid Clean are completely safe for your equipment when used at label rates. The fact Cid 2000 only has 20% stabilized peroxide compared to 50% stabilized peroxide like Proxy-Clean or Cid Clean creates a safer and more user friendly product for the end user.

START CLEAN and STAY CLEAN with CID 2000. It is the clear choice for cleaning and maintaining proper water lines.

-Ross Thoreson
Best Veterinary Solutions





Brands of a feather flock together

Bayer recently acquired the KMG line of insecticides. So now some of your favorite brands will come from a familiar partner. Once again, Bayer has upped our commitment to bringing you high quality insecticides along with the proprietary research to bring you more.

Included are products from popular brands like:

Tempo[®] **Credo[®]** **QuickBayt[®]**
Permethrin[™] **Proxitane[®]** **Rabon[™]**
Ravap[®] **Vapona[®]**

Even better, all these products have the complete support of Bayer Account Services at 1-800-633-3796 or bayerdvm.com.

©2012 Bayer HealthCare LLC, Animal Health Division, Shawnee Mission, Kansas 66201
Bayer, the Bayer Cross, Tempo, Credo and QuickBayt are registered trademarks of Bayer.
Permethrin[™], Rabon[™], Ravap[®] and Vapona[®] are trademarks that have been assigned to Bayer.
Proxitane is a registered trademark of Solvay.

Transforming
livestock production 

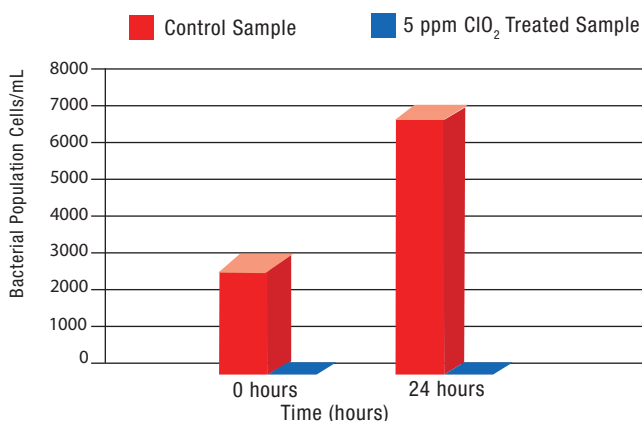
ProOxine® (AH) Disinfecting Solution For Animal Drinking Water

ProOxine® is the most effective tool for water management in animal facilities. ProOxine® keeps the bacteria level down in the water lines, and prevents biofilm from developing thus keeping the animals healthier by keeping down the pathogen level that could potentially travel from one animal to another. ProOxine® makes drinking water more palatable to poultry and livestock and therefore they drink more. Additionally, ProOxine® is highly effective in keeping water systems free of build up.

Efficacy of ProOxine® against Biofilm

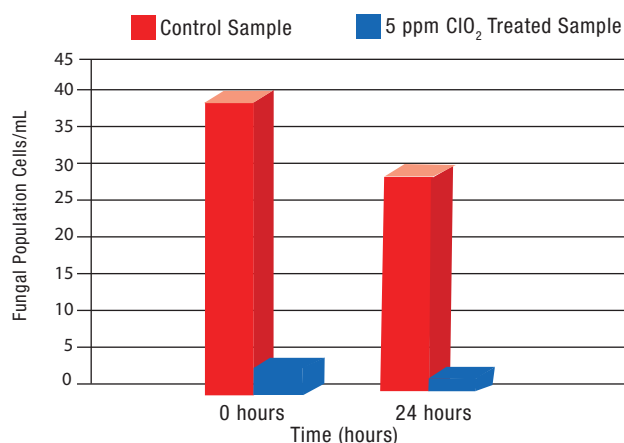
CONTROL EFFECT OF 5 ppm ClO₂ AGAINST BIOFILM BACTERIA

On Bacteria	Control Sample	5 ppm ClO ₂ Treated Sample
0 Hour	3000	30
24 Hours	7000	2



CONTROL EFFECT OF 5 ppm ClO₂ AGAINST BIOFILM FUNGI

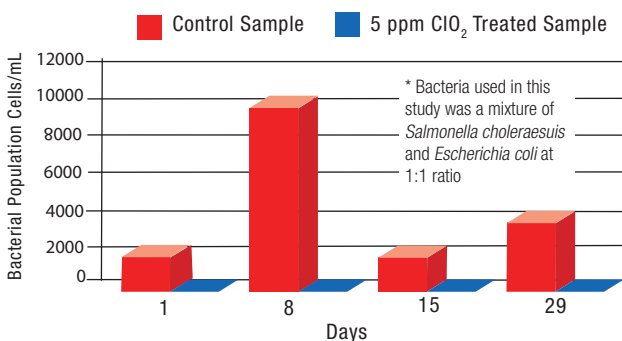
On Fungi	Control Sample	5 ppm ClO ₂ Treated Sample
0 Hour	40	4
24 Hours	30	2



Efficacy of ProOxine® against Salmonella and E-coli

REDUCTION OF BACTERIAL POPULATION* IN WATER AFTER CONTACT WITH 5 ppm CHLORINE DIOXIDE

On Bacteria	Control Sample	5 ppm ClO ₂ Treated Sample
1 Day	2000	20
8 Days	10000	2
15 Days	2000	2
29 Days	4000	2



Exceptional Chemistry • Extraordinary People • Excellent Service
www.bio-cide.com • 2650 Venture Drive, Norman, OK 73069
 405.329.5556 • 405.329.2681 fax • 800.323.1398
 Bio-Cide International is ISO 9001:2000 certified



Distributed by:
 Best Veterinary Solutions, Inc.
 515-836-4001 • 888-378-4045
www.bestvetsolutions.com

The Rodenticide Evolution

By: Ted Bruesch

National Technical Support Manager



Rodent control has come a long way in the past two centuries, but how did we get to this point? From cats & rat terriers to soft bait technology, this article will give you a background and understanding of where rodenticides came from, and where they are going.

Important Background Concepts:

Norway rats, roof rats and house mice are referred to as commensal rodents. That means, while they are found out in the “wild”, they can also live in our human environments and survive by eating our food. When humans began practicing agriculture and storing food, these rodents adapted. All three commensal rodents trace their ancestry to Asia including the Norway rat. This rat probably got its name when it was believed, likely mistakenly, to have been introduced to central Europe via ships from Norway in the mid-seventeen hundreds. As trading via ocean shipping spread, stowaway rodents also spread throughout the world. Since then, people around the world have been trying to get rid of them.

Resistance can be categorized as biological or behavioral. Biological resistance is a genetically inherited ability to tolerate more than a normal lethal dose of a toxicant. Behavioral resistance is an inherited behavioral trait which causes a rodent to not eat the bait in first place. An example of this occurred in Europe when a population of rodents were found to shun carbohydrate based rodenticides and were later controlled with protein based products.

Bait Aversion is reluctance by the rodent to try a new rodenticide. Because of their fearful nature this is often a greater problem with rats than mice, which are naturally inclined to try new foods. All active ingredients in rodenticides taste bad, which is the main cause of bait aversion problems. More active ingredient often means more bait aversion. Here are the most commonly used concentrations of the 10 active ingredients currently registered in the United States:

- 20,000 PPM (2%) Zinc Phosphide
- 750 PPM (0.075%) Cholecalciferol
- 250 PPM (0.025%) Warfarin
- 100 PPM (0.01%) Bromethalin
- 50 PPM (0.005%) Chlorophacinone, Diphacinone
- 50 PPM (0.005%) Brodifacoum, Bromadiolone, Difenacoum
- 25 PPM (0.0025%) Difethialone, Brodifacoum

Bait shyness can occur after a rodent eats a fast acting product and gets sick right away. Rodents will then connect the discomfort to the food. If they don’t die, they will avoid that food in the future.

There are two **rodent senses** which make it challenging to create an effective rodenticide: they have incredible senses of taste and smell. They can taste “contaminants” (active ingredient, dye, bittering agents, etc.) at less than 1 part per million (PPM).

Rodenticides can be divided into 3 groups of active ingredients:

Acute toxicants are the fastest acting, but they are prone to bait aversion and bait shyness. None of these have an antidote.

➤ Acute toxicants

- *Bromethalin* kills by damaging the central nervous system
- *Cholecalciferol* causes calcium to move from the rodents bones to various internal organs
- *Zinc Phosphide* reacts with stomach fluid to form phosphine gas and damages multiple body functions

There are two types of anticoagulants: First and Second Generation. Anticoagulants all work the same way – by interfering with the rodent’s natural blood clotting ability. As the rodent hemorrhages internally it loses its ability to sustain life. There are no signs of pain or discomfort as there are with the acute toxicants. Because of this, the rodent does not make a connection to its new food source and become bait shy. As with both anticoagulants, there is no bait shyness and they share the same antidote – Vitamin K1.

➤ First Generation Anticoagulants:

- *Warfarin, Chlorophacinone and Diphacinone* are known as multiple feed anticoagulants. Rodents must feed on them for at least several consecutive days to build a lethal concentration in their system.
- The effects take several days to more than a week to begin, further reducing any risk of bait shyness.

➤ Second Generation Anticoagulants

- *Brodifacoum, Bromadiolone, Difenacoum and Difethialone* are also known as single feed anticoagulants. Rodents only need to feed on these for one day to ingest a lethal dose.
- Historically, these products were also formulated at 50 PPM. Recently, that concentration has been reduced to 25 PPM in some new products creating highly palatable and very effective formulations.
- Most single feed anticoagulants are formulated at 50 PPM which means there is much less active ingredient causing the rodenticide to taste bad. Difethialone is formulated at 25PPM increasing its palatability to rodents and lowering the risk of secondary poisoning to non-target animals.

Rodent Control through the Ages

Ancient Egyptians revered cats in part because of their rodent killing abilities. In the Middle Ages “rat catchers” employed a variety of traps, rat terriers and “secret” potions to kill rodents. Twentieth century farmers and exterminators were still making their own special rodent killing compounds until the federal government began regulating pesticide formulations.

Early modern rodenticides included toxicants such as arsenic, red squill and strychnine. All of them carried serious risks to applicators, children and non-target animals such as domestic animals and wild-life. After World War II, the less risky anticoagulant rodenticides appeared and have since become the predominant class of active ingredients.

Bait forms utilizing modern day active ingredients have gone through a drastic amount of changes over the years as well. What started them all was meal bait. They are very palatable but are not weather resistant, and are difficult to make tamper-resistant by non-target animals. Pellet formulations improved the weather resistance but did not improve the tamper resistance. Meal and pellets in place

packs provided dose control and convenience. Eventually, blends of grains, flavorings and other ingredients with melted paraffin wax were poured into molds to form blocks. Later extrusion technology resulted in more efficient wax block manufacturing. As new active ingredients were developed, rodenticides became significantly more palatable. Wax block baits were effective to varying degrees but the high concentration of wax contributed to bait aversion and melting problems.

Liphatech understood the need for a bait with increased palatability and answered it with Soft Bait technology. In 2010, Liphatech, the Soft Bait Innovators™ launched the agriculture market's rodenticide revolution: no-wax FastDraw® Soft Bait containing difethialone, and later in 2012 Revolver™ Soft Bait containing bromadiolone. Both were developed utilizing second generation anticoagulants and with mixtures of milled grain & oils. FastDraw and Revolver soft baits outperform the popular red and green wax-blocks in head-to-head palatability comparisons. They maintain their consistency in hot and cold temperatures due to containing no wax, and remain highly acceptable to rodents even when there are competing food sources. Whether you or your customers are knocking down a high rodent population, need a low cost per placement maintenance bait, or simply demand the best, FastDraw and Revolver are the clear choices when switching from red and green wax-blocks.

Modern rodenticide formulation evolution has been driven by several important factors: greater efficacy against target rodents, less risk to non-target animals, and efficacy against warfarin resistant rodents. Below is a chart detailing the different rodenticide formulations, and their advantages & disadvantages.

Formulation	Advantages	Disadvantages
Water Bait	Likely to appeal to rodents in very dry environments.	Can be easily spilled. Active ingredient (diphacinone) is weak against mice.
Tracking Powder	Can be placed directly in rodents nest or pathway.	Restricted use product due to toxicity. Risks related to its ability to be tracked from where it was placed and its ability to become an airborne contaminant must be managed. All are labeled for indoor use only. ZP Tracking Powder is only labeled for mice.
Bulk (loose) Pellets	Pellets resemble seeds and are readily accepted. Best for rat burrow baiting especially if pellets are paraffinized to withstand burrow moisture.	Easily trans located, especially by mice.
Meal Bait	Excellent palatability and acceptance. Excellent burrow bait: <ul style="list-style-type: none"> • Especially if soil is dry • If even one kicked out pellet is unacceptable 	Not easily secured. Not moisture resistant.
Place Packs (meal or pellet)	Pre-measured doses. Minimal applicator contact. Bait is protected from dirt. Bait melt and insect attack is minimized.	Not as weather tolerant as blocks and soft bait.

Wax Bars	Best for high moisture areas such as sewers. The larger block size may be more cost effective in certain heavy infestations.	High wax content may affect palatability. Can melt in bait stations. May be attacked by insects and mollusks.
Extra Durable Wax Block	Preservatives minimize mold. Fine texture eliminates seeds and husks. Extra wax enhances moisture tolerance. Well suited for audited accounts.	High wax content and preservatives may affect palatability. Can melt in bait stations. May be attacked by insects and mollusks.
Molded (poured) Wax Blocks	Usually more moisture tolerant.	Older technology. High wax content may affect palatability. Can melt in bait stations. May be attacked by insects and mollusks.
Extruded Wax Blocks	Good to very good palatability and efficacy. Easily secured. Industry standard for routine rodent control.	Can melt in bait stations. May be attacked by insects and mollusks.
Soft Bait Grain and vegetable oil (no wax)	Very good to outstanding palatability and efficacy. Doesn't melt in bait stations. Available in difethialone or bromadiolone. Similar to blocks: Mold and moisture tolerance, ease of application. The future of rodent control.	May attract and be consumed by insects and mollusks.

The Future Is Soft

Why put the livelihood of your production facility at risk of a high rodent population? With federal food safety regulations and corporate biosecurity inspections gaining popularity, many poultry and swine producers are rapidly making the switch to FastDraw and Revolver soft baits to keep their rodent populations down. Their low cost, single-feed soft bait pouches can help: reduce the risk of diseases, reduce feed contamination & consumption, lower costly building damage, and may keep your operation within regulations or guidelines.

Many companies have come to rely on Liphatech's innovative product line of rodenticides and AEGIS® bait stations, entirely manufactured in the U.S.A., to keep their flock or herd free from rodent borne diseases. To learn more about soft bait, how it can improve your biosecurity program, and save your company time & money, contact your animal health distributor, visit Liphatech.com or call 888-331-7900. Think Savings. Think Effectiveness. **Think Soft Bait.**



BVS

Best Veterinary Solutions, Inc.

325 Lakeland Drive NE

P.O. Box 266

Willmar, MN 56201

RETURN SERVICE REQUESTED

PRSR STD
U.S. POSTAGE
PAID
WILLMAR, MN
PERMIT #644

**Check out our
new, updated
BVS Website:**

www.bestvetsolutions.com



Contact BVS for your

FREE

**CID Lines
Interactive**

**Hatchery
Hygiene**

DVD