



Hydromer Hygiene Bath

AN HERBAL DISINFECTANT POULTRY BATH

WHY WE NEED TO CHANGE THE POULTRY DISINFECTION PRODUCTS FOR SLAUGHTERHOUSES?

modern farmer
Germany Says "Nein!" to Chlorine Chickens From The U.S.

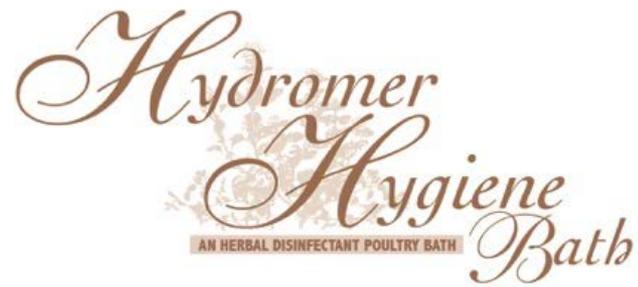
GlobalMeat news.com
American Poultry Standards Draw Criticism At Trade Talks

The Palm Beach Post
Chlorine Chicken Snarls U.S. - Europe Trade Deal

onearth
A Survival Guide for the Planet
Chlorine In Your Chicken: Why Poultry Is More Dangerous Than Ever

npr news
European Activists Say They Don't Want Any U.S. Chlorine Chicken

JFP Online
International Association for Food Protection
Scientific And Technical Factors Affecting The Setting of Salmonella Criteria For Raw Poultry: A Global Perspective



SYNOPSIS

Chlorine treatments of chicken products in the sanitization process have been under scrutiny here in the U.S. (see complaints to consumer products to FDA), as well as in the EU. The EU banned the importation of U.S chickens to the EU.

- 1.) According to a European Consumers' Organization study conducted in 2010, 82 percent of U.S. chicken that had been treated in chlorine baths still contained harmful pathogens. **The bath essentially becomes a pathogen cesspool that contaminates all the other chickens that are submerged in it.**
- 2.) **Chlorine based washing solutions is commonly used for sanitization of poultry products, but it reacts with organic matter and forms carcinogenic compounds** (FDA, CDC, 2010).
- 3.) Studies about toxicity of the compounds formed during the treatment of chicken carcasses with chlorinated disinfectants -
 - * **Chloroform has been detected** in chicken treated with aqueous chlorine (Robinson et al. 1981). Levels of chloroform observed would result in exposure to chloroform at levels well below the tolerable daily intake (TDI) for this compound.
 - * **Formation of semicarbazide**, a chemical belonging to a family of chemicals (hydrazines) known to cause cancer in animals, has been demonstrated following exposure of chicken flesh to aqueous chlorine (Hoenicke et al. 2004).

The superior performance of our all herbal, **HYDROMER HYGIENE BATH**, is clearly demonstrated in the following product information guide.

Hydromer Hygiene Bath

AN HERBAL DISINFECTANT POULTRY BATH

A NATURALLY SAFE ALTERNATIVE TO CHLORINE CHEMICAL DISINFECTANT BATHS FOR THE POULTRY INDUSTRY.

- WETS OUT FOR A UNIFORM DISINFECTION .
- 3 TIMES MORE EFFECTIVE THAN CHLORINE.
- LASTS 3 TIMES LONGER AS A BATH WITH CHLORINE.
- NATURAL AND SAFE TO USE GERMICIDE.
- LITTLE TO NO RESIDUE REMAINS ON TREATED SURFACE
- LITTLE TO NO TASTE
- LONG LASTING PRESERVING EFFECT DURING REFRIGERATION.
- COST COMPARATIVE TO CURRENT CHEMICALS IN USE.
- NO LINGERING AFTER TASTE



Hydromer Hygiene Bath

AN HERBAL DISINFECTANT POULTRY BATH

The first ever product with proven wettability.

Hydromer Hygiene Bath is the first ever poultry disinfectant bath that will uniformly wet out. By having full uniform coverage, the overall disinfection of the meat is better. To show this, we incorporated a fluorescent color that reacts to our main active ingredient to show how it wets out over the entire chicken piece.



*Our active ingredient is not water soluble, however our technology made it water soluble so that it wets out evenly over the entire poultry carcass. All ingredients are GRAS listed.



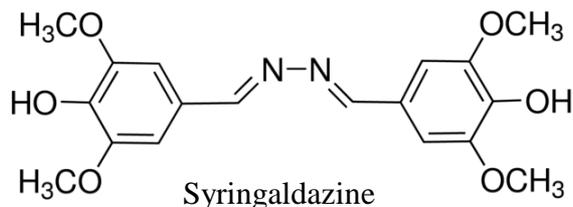
A: Chicken dipped in water and fluorescein

B: Chicken dipped in Hydromer Hygiene + Fluorescein



Detection of chlorine ion in water

We use syringaldazine (chemical structure presented in this slide), a reagent to indicate the presence of free chlorine in water.¹



Procedure: Aqueous solutions contain varied concentrations (50ppm, 5ppm, 0.5ppm, and 0.1ppm) of chlorine were prepared. A standard solution of syringaldazine (0.01M) in ethanol was prepared and added into chlorine solutions in a volume of 0.2ml. The mixed solutions were stirred for 3 minutes at room temperature while the color become stable.

50 ppm



5 ppm



0.5 ppm



0.1 ppm



To prepare a chemical comparison, we started with Chlorine.

1. Use of syringaldazine in a photometric method for estimating "free" chlorine in water R. Bauer , C. O. Rupe Analytical Chemistry **1971**, 43,421–425



Detection of chlorine ion in chicken dipping solution

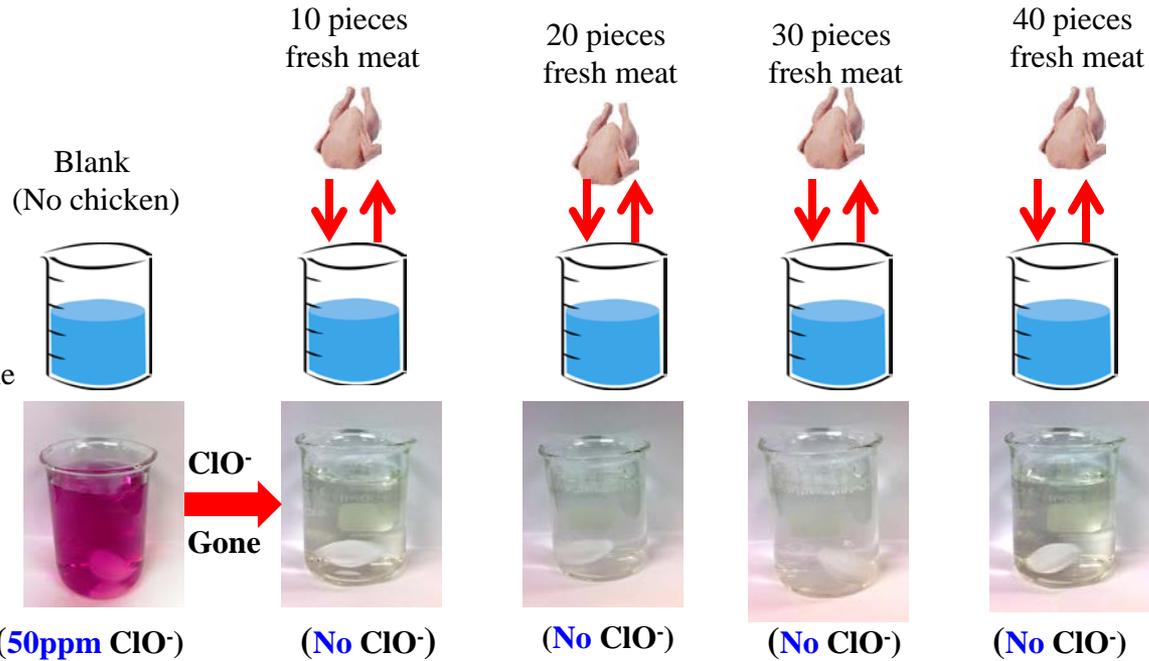
As indicated from the previous experiments, color of the chlorine solutions diminished dramatically from 50ppm to 0.1ppm. We therefore decided to use this method to visualize the presence of chlorine ions in solutions after dipping chicken. A detailed procedure is presented in the following.

Chicken Dip Procedure:

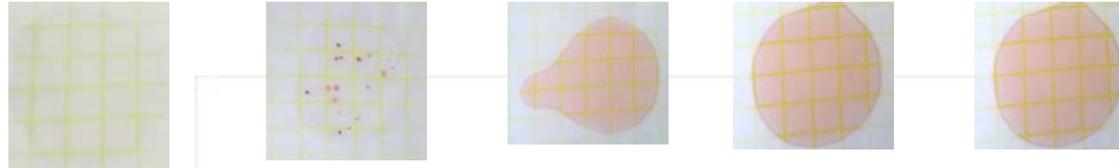
1. Prepare 4 solutions contains 50ppm of ClO^- with deionized water.
2. Cut chicken meat into pieces with similar surface area. (~2cm*2cm) The weight is approximate 3.5 g per piece. Chicken meat is exposed in air for 5 hours before use.
3. Dip chicken meat in each solution and wait for 1 min. A new piece of chicken meat is used every time before dipping. The volume of stock solutions are 150ml.
4. Qualitative evaluation of the presence of chlorine in the stock solution at **10, 20, 30 and 40** dipped chicken pieces.
5. Used solution were analyzed for bacterial contamination.

Chlorine disappearance and cesspool effect

Each piece of chicken meat (4g) was kept in the solution (150 ml) for 1 min.



Bacteria Culturing Results



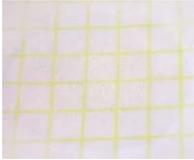
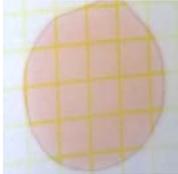
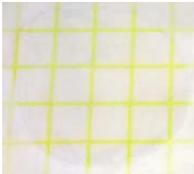
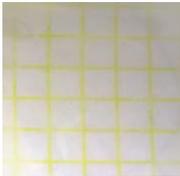
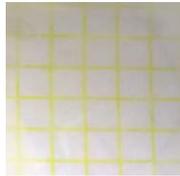
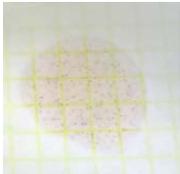
Heavily contaminated after 10 times of dipping with fresh chicken meat.

Number of Bacterial Colony

< 1 CFU/ml ~ 19 CFU/ML TNTC* TNTC* TNTC*

*TNTC – Too numerous to count

**Bacterial Growth Dependence on Number of Dipping Times:
 – Spice Hygiene (1:10) *VS.* Chlorine**

Number of Dipping Times	10 Pieces	20 Pieces	30 Pieces	40 Pieces
Chlorine Solution, 150mL (50ppm)	 <1 CFU/ML	 TNTC*	 TNTC*	 TNTC*
Hydromer Hygiene 1:10 Solution, 150 mL	 <1 CFU/ML	 <1 CFU/ML	 <1 CFU/ML	 >100 CFU/ML

Conclusion: Antibacterial activity of 50 ppm chlorine solution disappears after 10 times of use, while disinfecting properties of Hydromer Hygiene solution is up to 30 times (3 times higher than chlorine solution) repeated usage.

*TNTC – Too numerous to count

New Reports showing food poisoning due to poultry:

In Healthline News, April 23, 2013 issue titled: Report: Chicken, ground beef top the food poisoning pyramid.

“Chicken and ground beef topped the risk list after the nonprofit watchdog group analyzed more than 33,000 cases of food poisoning in the U.S. over the course of 12 years.”

“The CSPI report states that chicken and ground beef were responsible for a combined 788 outbreaks and 10,697 cases of illness.”

In NBC.COM Online, August 12, 2010 issue titled: Food Poisoning.

“Poultry is still the leading culprit in food poisoning outbreaks.”

“Chicken, turkey and other poultry accounted for 17 percent of the food borne illness outbreak reported to the government. Beef and leafy vegetables were close behind, at 16 percent and 14 percent.”

“An estimated 87 million cases of food borne illness occur in the United States each year, including 371,000 hospitalizations and 5,700 deaths,, according to an Associated Press calculation that combines CDC formula with recent population estimates.”

In FDA – Food borne Illnesses: What you need to know

“The Federal government estimates that there are about 48 million cases of food borne illness annually – the equivalent of sickening 1 in 6 Americans each year.” Due to raw or uncooked poultry

In CBS NEWS.COM: April 23, 2013 issue of Ground beef, chicken more likely to cause severe food borne illnesses in U.S.

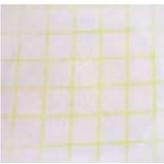
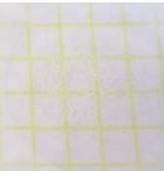
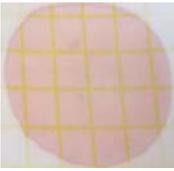
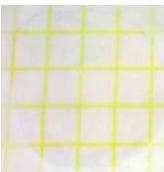
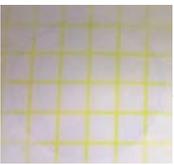
“Ground beef and ground chicken cause more hospitalizations than other meats in the American food supply, a new report finds.”

“Outbreaks from ground beef and chicken are reported frequently, and all too often cause debilitating illnesses...illnesses that lead to hospitalization,” CSPI food safety director Caroline Smith DeWaal, said in a written statement.”

Please see attachments for full articles

Bacterial Growth Dependence on Duration Time after Dipping:
– Spice Hygiene (1:10) *VS.* Chlorine

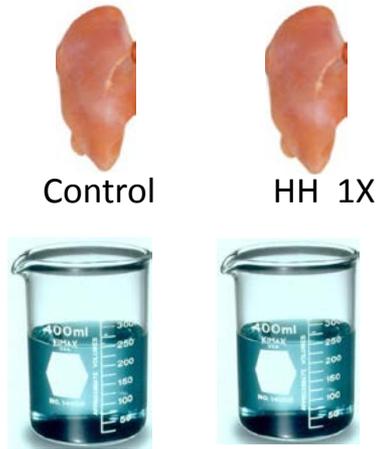
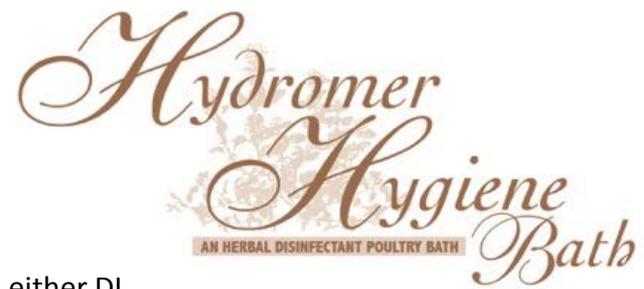
10 Times Dipping of Fresh Meat (Each dipping time is 1 minute)

Time after dipping	None	3 Hours	6 Hours	12 Hours
Chlorine Solution, 150 mL (50ppm)	 <1 CFU/ML	 <1 CFU/ML	 <1 CFU/ML	 TNTC*
Hydromer Hygiene 1:10 Solution, 150 mL	 <1 CFU/ML	 <1 CFU/ML	 <1 CFU/ML	 <1 CFU/ML

Conclusion: Hydromer Hygiene formulation provides longer (up to 10 hours) antibacterial activity comparing with conventional chlorine solution.

*TNTC – Too numerous to count

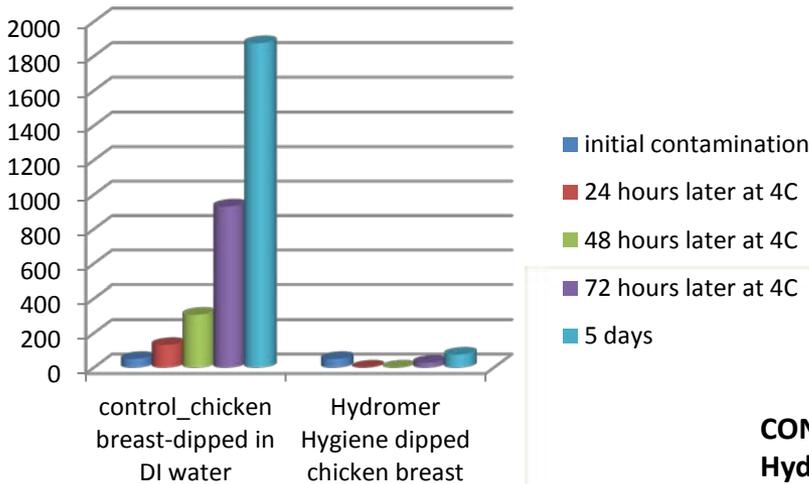
Hydromer Hygiene Bath Refrigeration Test



Design of the experiment:

Similar sized pieces of chicken were dipped in either DI water or Hydromer Hygiene solution 1X for this experiment. After dipping, they were placed at 4C refrigeration for 24 -72 hours. A bacterial surface contamination was measure prior to dipping as a zero point and then each piece was tested as 24h, 48h, 72h and 5 days from dipping and refrigeration.

Normalized Graph:



Aerobic bacteria contamination counts

Sample/Contamination counts CFU-colony forming units	control	HH
Point 0	8	12
24 hours	21	0
48 hours	49	0
72 hours	149	7
5 days	Over 300	18

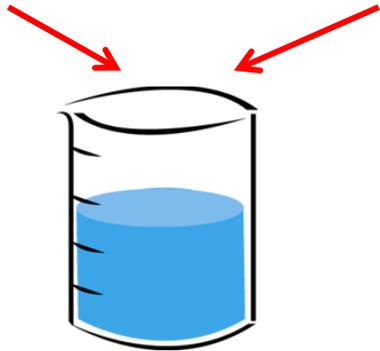
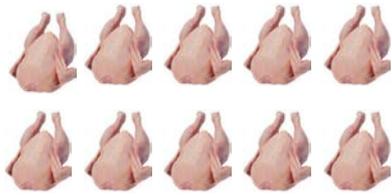
CONCLUSION:

Hydromer Hygiene preserve chicken from aerobic contamination for the 5 days, while the control meat becomes heavily contaminated after 48 hours during refrigeration at 4C.

Detection for residue of Hydromer Hygiene Bath key ingredients:

Test Procedure:

10 pieces of chicken treated with Hydromer Hygiene then rinsed 10 times in water

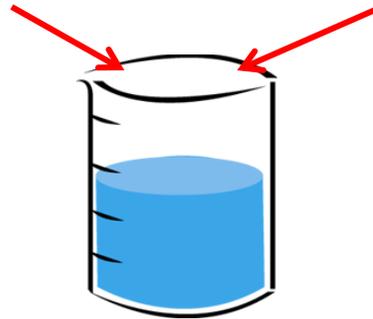
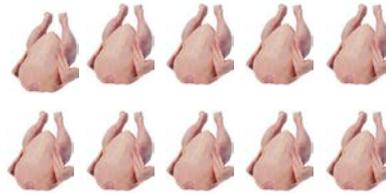


Rinse first time in 100mL of water

Run HPLC



Same pieces of chicken rinsed 10 times more in fresh water.

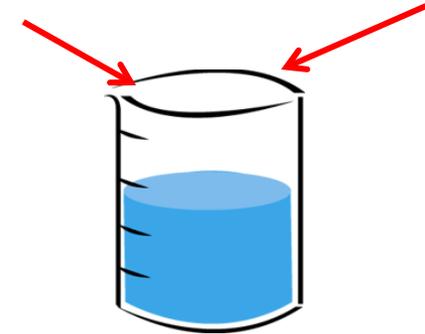
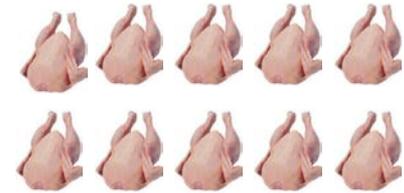


Rinse second time in 100mL of water

Run HPLC



Same pieces of chicken rinsed 10 times more in fresh water.

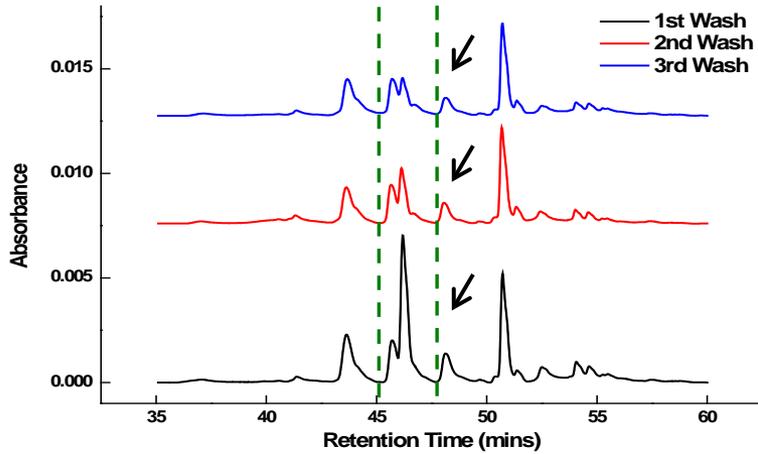


Rinse third time in 100 mL of water

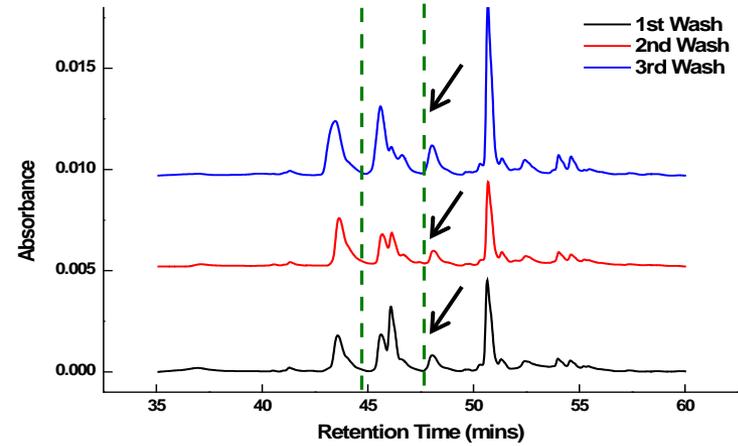
Run HPLC

Results of Residue Testing:

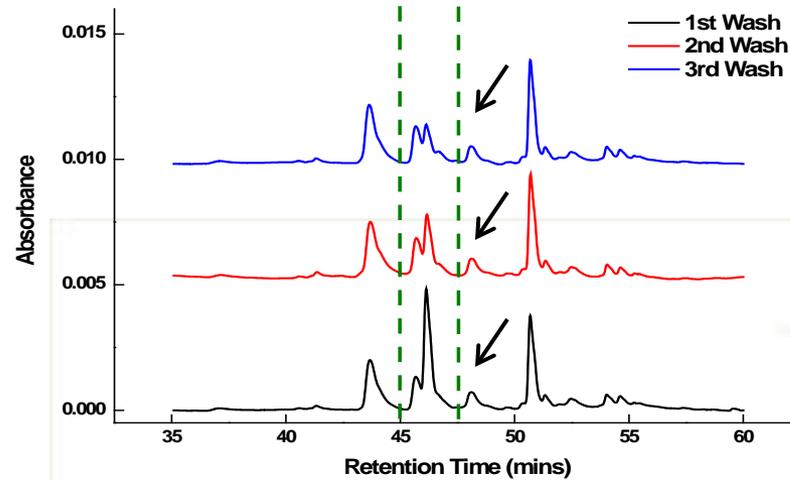
First Rinse Cycle



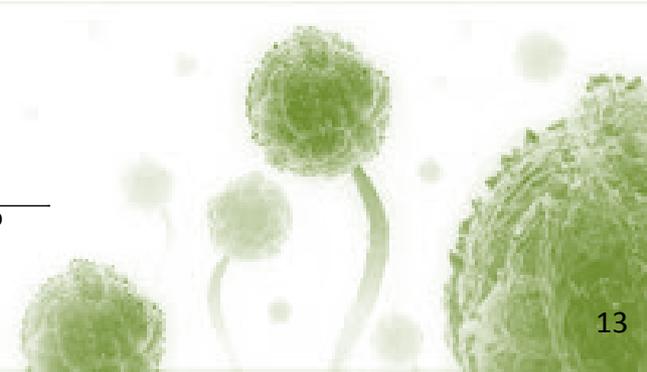
Second Rinse Cycle



Third Rinse Cycle



NOTE:
 Key ingredient peak for Hydromer Hygiene is indicated by arrow.





Hydromer Hygiene Bath

AN HERBAL DISINFECTANT POULTRY BATH

CONCLUSION:

Given the fact that the U.S. market is in need of a safe and effective alternative to chlorine bath sanitation, we here at Hydromer Inc, have developed just that. Hydromer Hygiene Bath out shines standard chlorine sanitation in its ability to wet out and have intimate contact over the entire poultry carcass, in it's efficacy to sanitize 3 times more poultry meat and in it's ability to remain effective as a bath 3 times longer than the current chlorine bath. Hydromer Hygiene Bath is an all natural product leaving no chemical or carcinogenic residue on the poultry meats.





Hydromer Hygiene Bath

AN HERBAL DISINFECTANT POULTRY BATH

WHY HYDROMER HYGIENE?

- No chemical residue
- Entirely natural and effective
- Lasts THREE times longer than chlorine
- THREE times more effective than chlorine
- Wets out and therefore totally covers entire poultry carcass
- Little to no residue left on chicken
- Little to no taste on cooked chicken
- Long lasting preserving effect on chicken when refrigerated.
- Cost competitive to chlorine

