

# The Main Ingredient

MALABAR

A Bi-Monthly Newsletter from Malabar Super Spice Co. Ltd. Jan/Feb 2009

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MALABAR's full catalogue is available online.

[malabarspices.com](http://malabarspices.com)

## In the News

On September 17th, the Canada Gazette II released an official amendment to the Canadian Organic Products Regulations delaying the implementation date until June 30, 2009. These regulations are officially referred to as the Canadian Organic Regime (COR).



For more information:  
[www.inspection.gc.ca/english/fssa/orgbio/stainte.shtml](http://www.inspection.gc.ca/english/fssa/orgbio/stainte.shtml)

## Upcoming Events

**February 20 & 21, 2009**

**2009 Meat & Food Processing Expo**  
International Centre, Mississauga, ON.

[www.foodindustryexpo.ca](http://www.foodindustryexpo.ca)

Malabar Super Spice Co. will be an exhibitor at this Expo – come and visit us @ booths 205 & 207.

**April 1 – 3, 2009**

**SIAL Montreal 2009**  
International Food Tradeshow

[www.sialmontreal.ca](http://www.sialmontreal.ca)



**April 14 – 16, 2009**

**Iowa State University**  
**Meat Science Short Course**

Dry & Semi-Dry Sausage Short Course

[www.ans.iastate.edu](http://www.ans.iastate.edu)

# THE MEAT OF IT:

## Phosphates

*Phosphates are an invaluable addition to a meat processor's repertoire – a key tool in producing the good quality, tasty meat products that customers rely on every day. However, phosphates are often not well understood, and processors can feel less than comfortable with how to use them most effectively. In this issue of The Main Ingredient, we tackle the tricky subject of Phosphates, where they come from, how they work and most importantly, how best to use them.*

### **Phosphorus – Essential to Life**

Phosphorus is in all living organisms, and is essential to life. Phosphates are important to human metabolism, for energy transfer and bone growth, and also for plants for root development and to prevent disease. Phosphates are also one of the most common additives used for improving the quality of meat, poultry and fish products.

To understand how phosphates work in meat processing, we need to know a little about the chemistry of meat itself. The main components of meat are: proteins, water, lipids, minerals and sugar. Adenosine Triphosphate (ATP) is the 'natural phosphate' contained in meat, which allows the proteins to stay open to hold moisture so that the meat is firm and juicy. After slaughter, with rigor mortis, ATP is used in biochemical reactions and then the pH drops, and the muscle proteins (actin and myosin) close and stick together, reducing the potential for water retention. The addition of phosphates during meat processing increases the pH, the protein structures are opened, and water is again bound to proteins.

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# FROM THE LAB

For this month's feature *From the Lab*, we draw your attention to a key table that's useful for meat processors looking to use phosphates to increase yields in their products. Originally published in 1984, this table is available in the *Handbook of Meat Product Technology*, by M.D. Ranken, Blackwell Science Ltd, 2000.

The water content of lean meat or muscle is approximately 75%. The addition of water alone, either by injection, tumbling or cooking in water will increase the yield of lean meat when cooked, even though a cooking loss does occur.

The overall effects of added water, salt and phosphates is summarized below, with specific comparison of cooking losses and yields.

- Mixtures made with 100 parts of diced pork meat, injected with the quantities of water, salt and sodium tripolyphosphate.
- Results show that salt and phosphate together produce increases in yield, greater than the combined effects of salt and phosphate individually.
- Meat is pasteurized when cooked to internal temperature of 70°C (160°F) and held at that temperature for at least 2 minutes.

*The information provided is accurate and reliable to the best of our knowledge, but is offered solely for consideration, without warranty or guarantee.*

Mixture #	Mixture Containing:	Unheated (held 24h @ 5°C)	Pasteurized (ham process)
1	100 Meat only	Lost 0 Yield 100	Lost c. 20 [c = cooked] Yield c.80
2	100 Meat +20 water	Lost 4-10 Yield 110-116	Lost c. 28 Yield c. 90
3	100 Meat +20 water +2 salt	Lost 0 Yield 122	Lost c. 20-25 Yield c. 97-102
4	100 Meat +20 water +0.3 phosphate	Lost 2-6 Yield 114-118	Lost c. 22-28 Yield c. 92-98
5	100 Meat +20 water +2 salt +0.3 phosphate	Lost 0 Yield 122	Lost c. 12-20 Yield c. 102-110



## Did You Know?

The Canadian Food Inspection Agency (CFIA) has made a preliminary decision to discontinue the current food labeling approvals program. Pre-market label approval for domestic and imported products, including meat, processed fruit and vegetable products may no longer be required with the final decision still

to be announced. There has been considerable industry criticism including concerns of mislabeling and unsafe products arriving on store shelves. Label verification will now be the responsibility of the frontline food inspectors.

# Phosphates

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## **Phosphorus – Essential to Life**

Phosphate is an inorganic chemical, and is a salt of phosphoric acid. A phosphate ion consists of one central phosphorus (P) atom surrounded by four identical oxygen atoms. Phosphoric acid is produced from phosphate rock which is mined and processed.

The common name used will depend on the number of P atoms;

- 1 P atom : orthophosphate
- 2P atoms: pyrophosphates or diphosphates
- **3 P atoms: tripolyphosphates**
- >3P atoms: polyphosphates

The two main characteristics of phosphates are their chain length and their pH, which then define their functional properties in meat applications. The primary properties include:

1. Increased water holding capacity: Phosphates are able to make muscle proteins soluble once again, allowing the muscle fibres to separate and again retain moisture, and also increases the pH. This restores the meat to the natural firm consistency of freshly slaughtered meat.
2. Reduce rancidity: Phosphates can bind the heavy-metal ions (pro-oxidative materials) that are also found in meat, as well as inhibit lipid (fatty acid) oxidation which can otherwise result in the “off-flavours” or “warmed over flavour” when cooked.

These properties also result in reducing cook-cool losses (decreasing shrinkage), helping to preserve the meat colour, flavour and enhancing emulsion stability for emulsion products.

## **Phosphates in Meat Processing**

In meat processing, one phosphate chain does not work best for all applications. Consideration should be given to the unique processing requirements for meat products that are injected and tumbled, and those meat products that are ground, using a grinder, bowl cutter or emulsifier. European phosphate manufacturers have been pioneers in phosphate technology for over 60 years, and have developed special phosphate combinations using an advanced spray drying technology. This process results in the availability of unique phosphates that are specifically suited for meat processing.

For injection and tumbling, it is important to use a phosphate blend that easily dissolves in cold water, and with a recommended pH of 9 – 9.5. This not only increases the water holding capacity, but also adjusts the pH of the meat (especially PSE meat), to ensure a more consistent high-quality product.

For sausage production and emulsion type products (including wieners, bologna, kielbasa, and smoked sausages), the phosphate blend should have a lower pH (7 – 7.5 is recommended), to provide for rapid and intensive colour development, firm texture and a meaty taste. Phosphate stabilizes the emulsion and helps prevent “greasing out”. Remember that meat cuts can vary in quality, based on the age of the meat, the cut of meat, and also on the slaughter process. Phosphates are recognized as the one key additive that can positively affect the colour, flavour and yield of meat products.

***If you have any questions, or would like more information on how to use phosphates effectively, contact our technical team at [lab@malabarsuperspice.com](mailto:lab@malabarsuperspice.com), or at 1-888-456-6252.***

## **CFIA regulations regarding Phosphates (Chapter 14)**

### **14.4.1 Compositional Requirements [B.14.021, B.16.100 table 12, B.22.012]**

**Phosphate Salts:** The maximum level of phosphate salts that can be added to meat products is 0.5% of total added phosphate, calculated as sodium phosphate. The addition of phosphate salts refers to the addition directly into the meat ingredient(s) by means of injection, pumping, massaging, tumbling, marination or mixing [B.14.021, B.22.012].



Canadian Food  
Inspection Agency

Agence canadienne  
d'inspection des aliments

# BOMBAL®

## Fungicide & Bactericide

**Now In Stock.  
Only At Malabar!**

In September 2008 Health Canada permitted the use of sodium acetate and sodium diacetate as a preservative in cooked and cured meat and poultry products, as well as prepared and preserved fish products.

Bombal® is a special powdered blend of both sodium acetate and diacetate, manufactured in Germany, and now available in Canada exclusively through Malabar. Bombal® is easy to use, economical and very effective as an accepted antimicrobial to reduce or eliminate post processing contamination from *Listeria monocytogenes*.

***For more information, or to order samples, call us today at 1-888-456-6252, or visit our website – [www.malabarsuperspice.com](http://www.malabarsuperspice.com).***



# Blends for the New Year



Marinades are an excellent way to add value to your products, to create tasty take-home options for your customers. At Malabar, we do incorporate phosphates in our tumble marinades in order to maximize pickup during the tumbling or massaging process, and to ensure a better end-product.

To start 2009 out right, we're featuring a range of flavourful new blends for you to consider. Try one today!

### **Teriyaki Tumble Marinade** MALTM-003

A rich and savoury flavor blend starting with a soy sauce base, and sesame seeds added for the final touch.

### **Buffalo Wing Tumble Marinade** MALBWT-001

A hint of heat mixed with our own special blend of spices – great on wings and also chicken pieces of your choice!

### **Lemon Herb Tumble Marinade** MALLBT-001

A mellow mix of lemon and butter flavours, with added parsley that adds a gourmet touch to your fish or poultry entrees.

### **Wine & Herb Tumble Marinade** MALWHM-041

Burgundy wine flavour with a hint of onion – great compliment to beef meat cuts, and try it with chicken for a flavourful surprise!

**To Order a Sample** of any of the above or if you have a new flavour you'd like to try, contact us at **1-888-456-6252**, or email **lab@malabarspices.com**

## OUR PRESIDENT'S Message



A New Year has begun and I want to wish all of our customers a healthy and successful 2009. Frankly, I think we are all relieved to see 2008 come to an end. Market volatility was significant, and the prices of food products, including ingredients, rose beyond anyone's expectations or predictions. Then to end the year, our Canadian dollar took a major beating against the US dollar, which further added more than 20% to our costs for spices and food additives! It is easy to look at the downside, but maybe there is also an upside?

The most recent issue of Meat & Poultry magazine included an article suggesting that as a result of the current economic conditions, more consumers are eating at home. This same trend is increasing the sales of meat products in the supermarkets. This provides the industry with an opportunity for processors to consider innovative and tempting products, including pre-marinated meat products which are tender and flavourful, and with the added advantage of a short preparation time for the home cook. As an example, consider adding unique flavour combinations to your pork or beef products for economical customer choices that will taste great.

We have included a few flavour ideas in this newsletter, and we will be introducing more new flavour seasonings at the Meat & Food Processing Expo in February, at the International Center in Mississauga. Please come and visit us in booths 205 & 207. I look forward to seeing you there!

**Doris Valade**  
President  
Malabar Super Spice Co. Ltd.



For more information on any of the subjects covered in Malabar's newsletter, or to suggest topics you'd like to see covered in future editions, please contact Sara Alexander at [marketing@malabarspices.com](mailto:marketing@malabarspices.com).  
Look for our next edition in March/April 2009.

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