

# ProPhorce™ AC 299

One product,  
dual effects

ProPhorce™ AC 299 offers the best of two worlds

- Formic acid: to support microbial control
- The optimal sodium source: to enhance dEB.
- A valuable tool to help mitigate heat stress

# ProPhorce™ AC 299

## One product, dual effects

### Manage pathogens and optimize dEB with one product

With global warming and animal production circumstances intensifying, it is more important than ever to manage dietary electrolyte balance (dEB) of your animals and manage pathogenic bacteria – without compromising animal performance and feed efficiency.

What if you could do both by including just one product in your feed? You can with ProPhorce™ AC 299: a Sodium Formate based product by Perstorp.

Formate

Keep in-feed pathogens to a minimum with the formate ion

Formic acid and its salts have a bacteriostatic effect on pathogenic bacteria (such as *Salmonella* and *E. coli*) in the feed. As such, the passage of harmful bacteria into the small intestine is reduced. This effect improved gut health.

Sodium

Sodium to optimize dEB for optimal performance and during hot weather

Sodium is an essential mineral to feed the animal. It can optimize dEB in feed, which allows for extra resistance to stressful situations (e.g. heat stress) and may raise the productive performance of the animals.

Optimizing the dEB has shown to improve animal performance as measured by weight gain and feed conversion ratio (FCR). ProPhorce™ AC 299 increases dEB in the feed more efficiently than most other sodium sources.

## The power of formate: preventing the growth of pathogens

Formic acid and formates have been used successfully for their bacteriostatic effects against pathogens such as *E.coli* and *Salmonella* for decades. The presence of these components in the gastrointestinal tract will support the reduction of these pathogens.



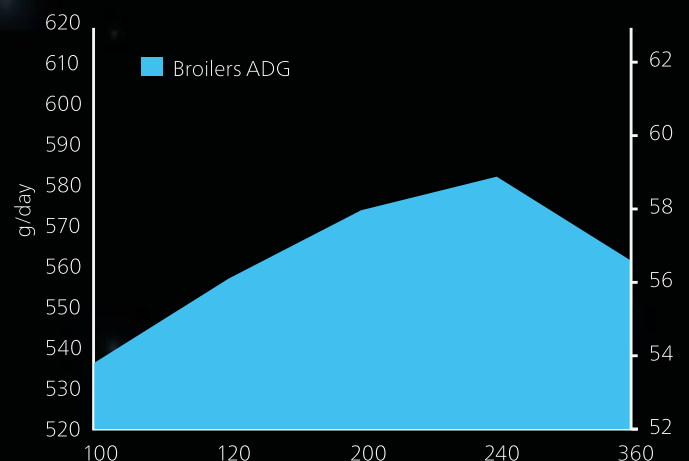
Formate

Sodium

## dEB and its major impact on performance

Adjusting dEB by just 100-120 mEq/kg can give performance gains of 4-7%. What other feed additives can provide such significant performance enhancements at such low costs?

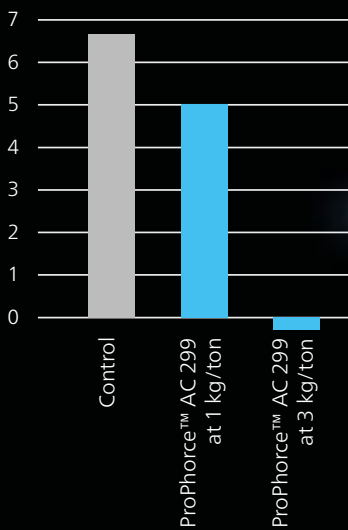
Electrolytes are integrally linked with fluid and acid-base balance in the organism. As such, they are part of mechanisms that affect such as bone density, heart and breathing rate, thirst, nutrient absorption in the intestine and more. No wonder optimizing their levels in feed has shown to improve weight gain, feed consumption and feed conversion ratio (FCR). (Borges et al., 2003, Nobakht et al., 2006, 2007)



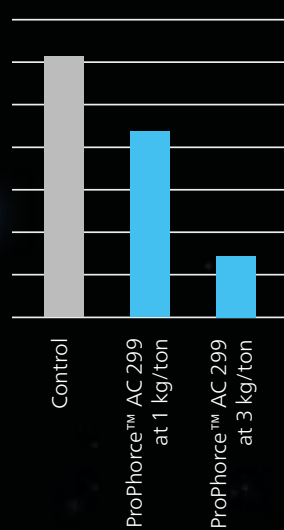
Optimum average daily gain performance is achieved at a dEB of 240 mEq for broilers. (Adapted from Borges et al 2003, Inra Prod. Anim. 2009, 22 (2), 117-130)



**E.coli**  
generations/4 hrs



**S.typhimurium**  
generations/4 hrs



Generations per 4 hours of E.coli and S. Typhimurium measured without and with different dosage rates of ProPhorce™ AC 299. (Perstorp trial, Nutricontrol (NL), 2015)

## Bacteriostatic effect at low dosing

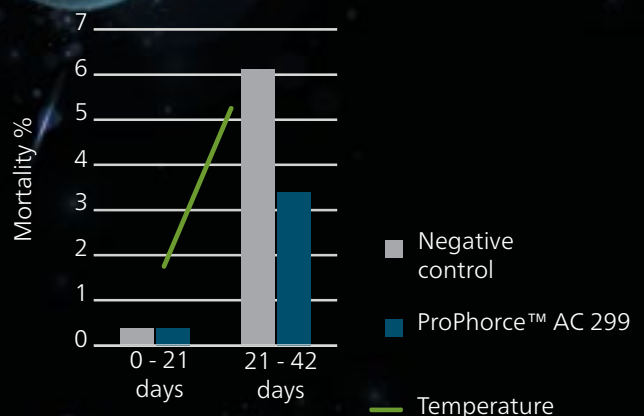
The formate ions have shown clear results against pathogenic bacteria starting at low dosage. In the trial on the left, ProPhorce™ AC 299 was able to reduce the growth rate of *E. coli* and *Salmonella* already at a dose corresponding to 1 kg/MT feed and the bacterial proliferation is almost stopped at a dose corresponding to 3 kg/MT feed. The trial was performed at pH 6. For dosaging indications optimal for you, please reach out to a Perstorp Sales Manager.

Formate

Sodium

## dEB: a life saver especially during heat stress

Optimizing dEB is important during normal circumstances but becomes critical during heat stress. Electrolytes regulate the retention and movement of water in the body, control the osmotic pressure and also the acid-base balance and blood pH. When dEB is optimized, it will help to mitigate negative physiological effects of heat stress. In the graph to the right you can see an example on how feed with an optimized dEB can reduce mortality of heat stressed broilers compared to a control group where dEB was not optimized.



ProPhorce™ AC 299 impact on broiler mortality after heat stress challenge. (Perstorp trial, Imasde (ES), 2013)

# Heat stress issues

Heat stressed animals shunt their blood flow to the skin to increase the radiant heat dissipation. Less blood circulates in the gastro-intestinal system to absorb nutrients from the feed and to supply the intestinal cells with nutrients and oxygen, which in turn can lead to:

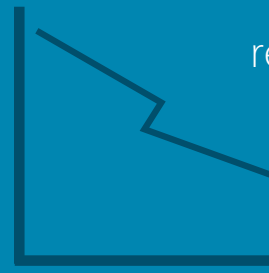
Reduced feed intake  
and growth



Reduced  
intestinal  
integrity



Reduced performance and quality  
(fertility, meat quality, nr. of eggs)



Worst case:  
reduced livability

# Sodium Formate



Perstorp:  
the world's  
largest feed  
grade sodium  
formate  
producer

A long history



140+  
years of history.  
Established in 1881



60+  
years of experience  
in animal nutrition



10+  
years of  
experience with  
ProPhorce™ AC 299

ProPhorce™ AC 299  
Free flowing product



# Get the gut wealth feeling

When you have gut health completely under control, that's the feeling of gut wealth – only from Perstorp. It's knowing you have the right approach to gut health and that you're achieving it in the right way – with expert support, proven gut health solutions and responsible sourcing. Find out more about gut wealth at [www.perstorp.com/gutwealth](http://www.perstorp.com/gutwealth)

For more information on ProPhorce™ AC 299 contact your sales manager or email [animal.nutrition@perstorp.com](mailto:animal.nutrition@perstorp.com)