



**Setting broiler chicks up to**

**thrive in the first seven days**

Whitepaper  
April 2022

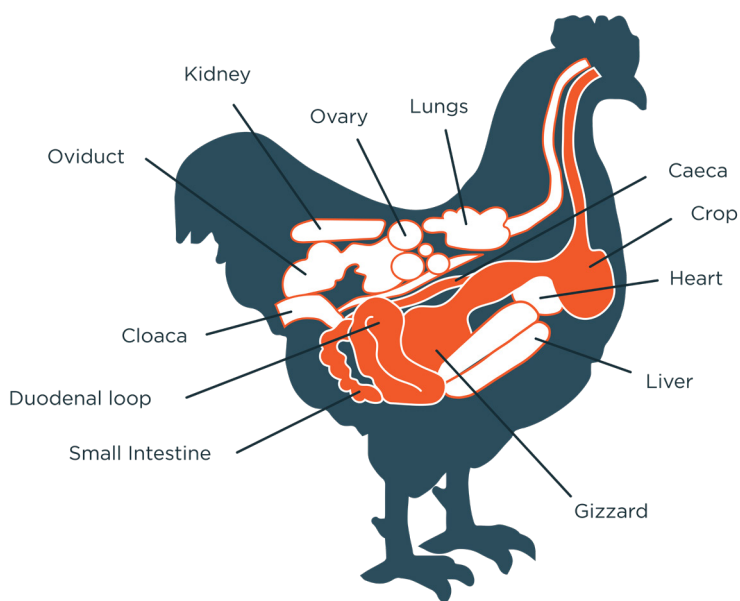
# Setting broiler chicks up to thrive in the first seven days

The first seven days of a chick's life are critical. A chick needs to gain approximately five times its weight in the first seven days in order to reach its full broiler potential. The first 7 days can be as much as 25% of a broiler's life, and it is without doubt the most important period of development – achieving a target weight at seven days provides a much greater chance of meeting final target weights.

The first seven days is also the period when farmers incur most mortalities, aside from serious disease outbreaks. Not getting this bit right can have a serious effect on a farmer's bottom line. The broiler chick is born with few natural defences and, until it acquires those defences, it is susceptible to a wide variety of digestive diseases. The gut of a bird has the most extensive exposed surface in a bird's body and is potentially exposed to a large number of pathogenic bacteria, such as *E. coli* and salmonella. The chick must quickly acquire natural defences against such bacteria and this is where the farmer can give a helping hand.



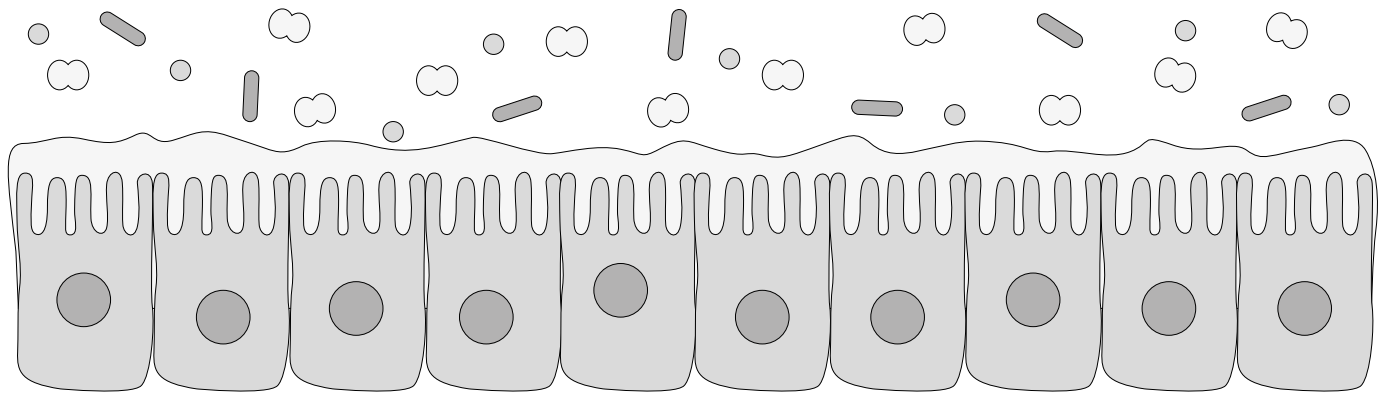
**Anatomy of the gut**



## Microbial colonisation

In a natural environment, the chick's gut would already contain beneficial bacteria or gut flora passed from the mother's gastrointestinal (GI) tract through vertical transmission. This gut flora can help to combat bad bacteria naturally through 'competitive exclusion' – colonising the gut with normal healthy bacteria in such quantities that it simply excludes pathogenic bacteria.

However, the modern farming practice of removing the eggs and placing them into an artificial environment for hatching reduces the opportunity for this transference of beneficial gut flora from mother to chick. And on its own, limited good gut flora takes time to multiply, leaving the new-born chicks with low defences.



## Combatting good and bad bacteria with antibiotics

Until recently, chicks were dosed prophylactically with an antibiotic such as amoxycillin on day 1 – this killed all bacteria in the gut, good and bad, before the chick could be adversely affected by anything bad. This practice was expensive but highly effective in eliminating the threat that bacteria poses to the healthy development of broiler chicks.

However, routine administration of antibiotics is now an outdated practice, due to its clear links to antibiotic resistance developing in humans, and other methods of protection are required. Probiotics are a useful and cost-effective tool to combat digestive diseases which occur due to an imbalance in the gut microbiome.

Widespread use of antibiotics as a growth promoter is now banned in many regions around the world, and it is therefore increasingly frowned upon.

## The use of probiotics in place of antibiotics

The administration of a probiotic in the first few days can provide a mini-army of beneficial gut flora, which can rapidly colonise the gut to such an extent that it competitively excludes the bad bacteria. As the gut is colonised with favourable bacteria, organisms attach themselves to the epithelial gut lining and form a mat-like barrier, which prevents pathogens from attaching and colonising the gut. This leaves the chick with much better defences against disease.

This approach mimics nature's way, with the probiotic essentially making up for the lack of beneficial gut flora transferring from the mother to the chick in artificial hatching environments.

## Did you know?

### Acid can be friendly

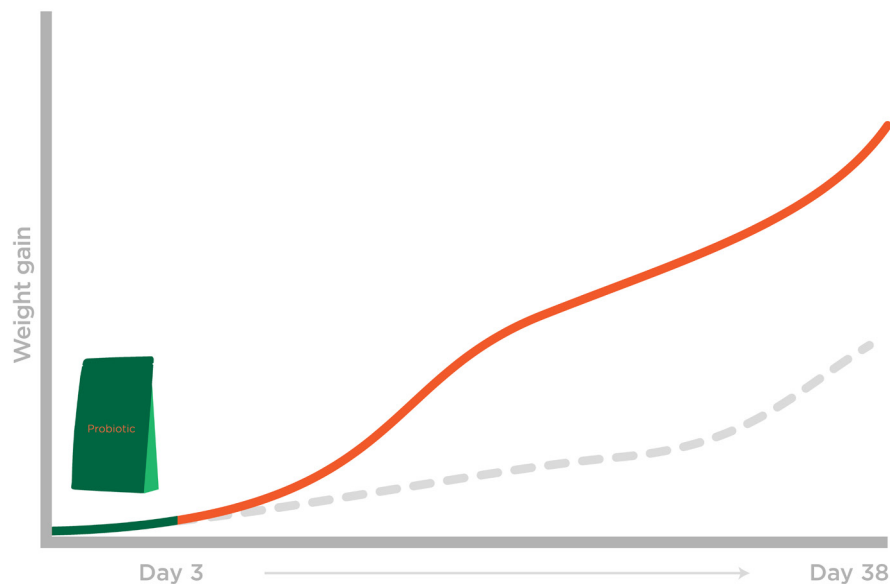
Acid has long been an ally to poultry farmers, who were adding cider vinegar to a chick's water many years before the science of probiotics was discovered. Most beneficial microflora are acid tolerant, and therefore grow best at lower pH, whereas potentially pathogenic organisms are intolerant to acidic conditions. Acidifying the water with organic acids provides a competitive disadvantage to unfavourable bacteria in the gut, allowing organisms beneficial to gut health to prosper. Using a buffered acid ensures that it is not deactivated whilst passing through the proventriculus and gizzard, allowing it to reach the small intestine where it provides maximum benefit.

## Ongoing benefits of probiotics

As well as helping to prevent mortalities in the critical seven day period, there is significant evidence that early gut microbial colonisation is important for postnatal growth, organ development and the overall ongoing immune development of the bird, ensuring long-term health and productivity.

Poor gut health can impede nutrient uptake and utilisation, leading to poor growth and performance with poor profits to match.

Probiotics can help maintain a healthy gut flora, which in turn can help with digestion and energy provision in the form of amino acids. Vitamins such as vitamin K, and water-soluble vitamin B, such as biotin, cobalamin, folates, nicotinic acid, pantothenic acid, pyridoxine, riboflavin and thiamine, are all synthesized by microbial communities in the gut. Overall, birds who are fed probiotics gain and maintain healthy weights. Furthermore, a gut populated with beneficial bacteria will be more robust against challenges like coccidiosis later on.



## A cost-effective boost

Some farmers may have reservations about the cost of probiotics, but we think the gains in terms of early disease resistance and ongoing ability to gain weight and thrive make them an obvious choice. Using a probiotic at days 1-3 is the most cost-effective time to provide birds with a boost that will help them develop into healthy mature birds. At this point, the chicks are not drinking large amounts of water and therefore don't consume a lot of the probiotic, but the early introduction of good bacteria enables it to start multiplying quickly of its own accord – at no added expense!

We have received very positive anecdotal evidence about decreases in attrition rates and net margin increases from our clients who are using probiotics in the first few days. In a world where routine antibiotic use is being discouraged, probiotics are a key part of the solution in the fight against disease in intensive production systems.

## ProStart

At Interhatch we recommend administering a probiotic called ProStart to chicks at days 1-3. It is supplied in powder form and can simply be mixed in with drinking water at 600g/1000L.

Agrivite ProStart is a lactic acid bacteria probiotic containing a high concentration of enterococcus faecium. Incidentally, enterococcus bacteria can be both good and bad – the enterococcus faecium in ProStart is found naturally in the gut and is a star player as far as beneficial bacteria are considered. It's well suited to survive the digestive process and establishes itself very quickly in the gut. It also produces acid which helps maintain a high acid level in the gut, preventing other bacteria from forming.

### Agrivite ProStart

A lactic acid bacteria probiotic targeted towards providing optimal start-up for broiler chicks by supporting fast colonisation of the gut and suppressing potential pathogens.

**Product Ref:** 200153

