

Effects of early nutrition and carbohydrate supplementation on water drinking pattern of broiler chickens

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Early access to nutrients post-hatch has a major impact on the immediate and long-term development of broiler chickens (Uni 1998). However, in many cases chicks are held for 24–48 h before placement, without access to feed and water. Delayed access to feed and water post-hatch dehydrates the chicks, resulting in depressed immune response and reduced overall performance. Conversely, immediate access to nutrients upon hatch improves the body weight, breast muscle yield, and the uniformity of chicks (Sklan *et al.* 2000). In a recent experiment, we demonstrated that provision of specific carbohydrates to broiler chickens either immediately post-hatch or 36 h after hatch affected life-long productivity of the birds (Ao and Choct 2003). In our study, the effects of holding time after hatch and carbohydrate supplementation were investigated by offering one control diet and three test diets supplemented with glucose, manno-oligosaccharides (MOS) and fructo-oligosaccharides (FOS). Three feeding regimens included (a) immediate access to both feed and water (0, 0), (b) immediate access to water but access to feed 36 h later (0, 36), and (c) access to both feed and water 36 h post-hatch (36, 36). In addition to having an effect on bird performance and mortality, the treatments also had marked influence on the pattern of water consumption of the birds throughout their entire life. Thus, birds given MOS drank more water during the first two weeks ($P < 0.05$), and this effect became less apparent as the birds got older (Figure 1). Birds

that had immediate access to water and 36 h delayed access to feed, and birds with 36 h delayed access to feed and water drank more water, especially during the first two weeks ($P < 0.001$); this effect disappeared for birds with 36 h delayed access to feed and water when the birds got older, but was still significant for birds that had immediate access to water but 36 h delayed access to feed post-hatch ($P < 0.001$) (Figure 2).

Also, birds that did not have access to both feed and water for 36 h post-hatch or those given MOS in their drinking water tended to have a lower overall mortality rate, which suggested that the post-hatch holding time and carbohydrates supplementation might have altered the immune competency of chicks.

More work need to be done on water intake of chicks and its importance for immune competency and growth performance.

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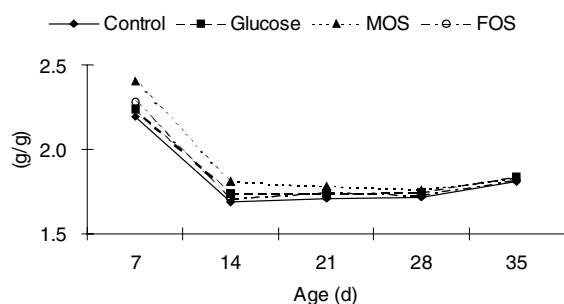


Figure 1 Effect of dietary carbohydrate supplementation on water intake/feed intake ratio.

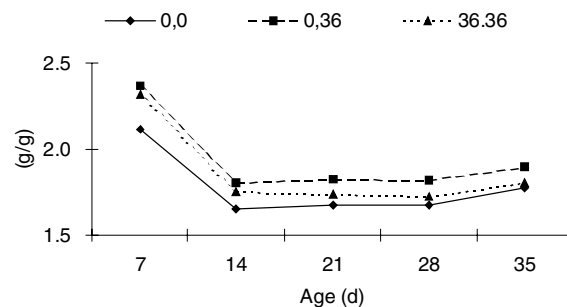


Figure 2 Effect of post-hatch holding time on water intake/feed intake ratio.