The nutritional health of foals begins even before birth, starting with a sound dietary plan for their mothers

Supplemental Needs

STUDIES REVEAL INSIGHT TO **DIETARY CARE** FOR FOALS, **BEFORE AND AFTER BIRTH**

By **AMANDA DUCKWORTH**

YOU ARE WHAT you eat applies to more than just humans. A broodmare's diet is important as she goes along in her pregnancy, and the impact of those choices carry through to the resulting foal as well. Beyond the regular diets both enjoy, supplements and other approaches to support the health and development of foals are routinely studied.

It is well understood how vital colostrum is at birth. As a foal advances past its mother's milk, it is important to help provide a well-balanced nutritional journey. What that entails varies from horse to horse, but the American Association of Equine Practitioners provides a general guideline in its paper "Help Your Foal Grow with Proper Nutrition."

"From birth to age 2, a young horse can achieve 90% or more of its full adult size, sometimes putting on as many as three pounds per day," the AAEP explains. "Feeding young horses is a balancing act, as the nutritional start a foal gets can have a profound effect on its health and soundness for the rest of its life.

"At eight to 10 weeks of age, mare's milk alone may not adequately meet the foal's nutritional needs, depending on the desired growth rate and owner wants for a foal. As the foal's dietary requirements shift from milk to feed and forage, your role in providing the proper nutrition gains in importance."

What all goes into a foal's nutrition plan actually begins before it is born. If a broodmare is receiving supplements, it is important to understand how it could impact her resulting foal as well. In May 2025, Animals (Basel) published "Mare Milk and Foal Plasma Fatty Acid Composition in Foals Born to Mares Fed Either Flax or Fish Oil During Late Gestation."

"Fish oil provides animals with eicosapentaenoic (EPA) and docosahexaenoic (DHA) acids, omega-3 fatty acids that have many important roles in animal health," explained researchers. "In comparison, terrestrial plants provide the omega-3 fatty acid alpha-linolenic acid, a fatty acid that grazing animals can metabolize into EPA and DHA. The current study supplemented late-gestation mares with one of three treatments: fish oil, flaxseed, or unsupplemented controls. This was carried out to compare the effects and benefits of these fatty acid sources on their blood and milk fatty acid compositions."

For the study, a controlled feeding trial for 15 late-gestation American Quarter Horse mares and their resultant foals was planned. The mares were assigned to one of three treatments: a flaxseed (FLAX), omega-3 source/fish oil (FO), or the control. Each group had planned for five mares, although only three completed the FLAX group due to timing issues from COVID-19.

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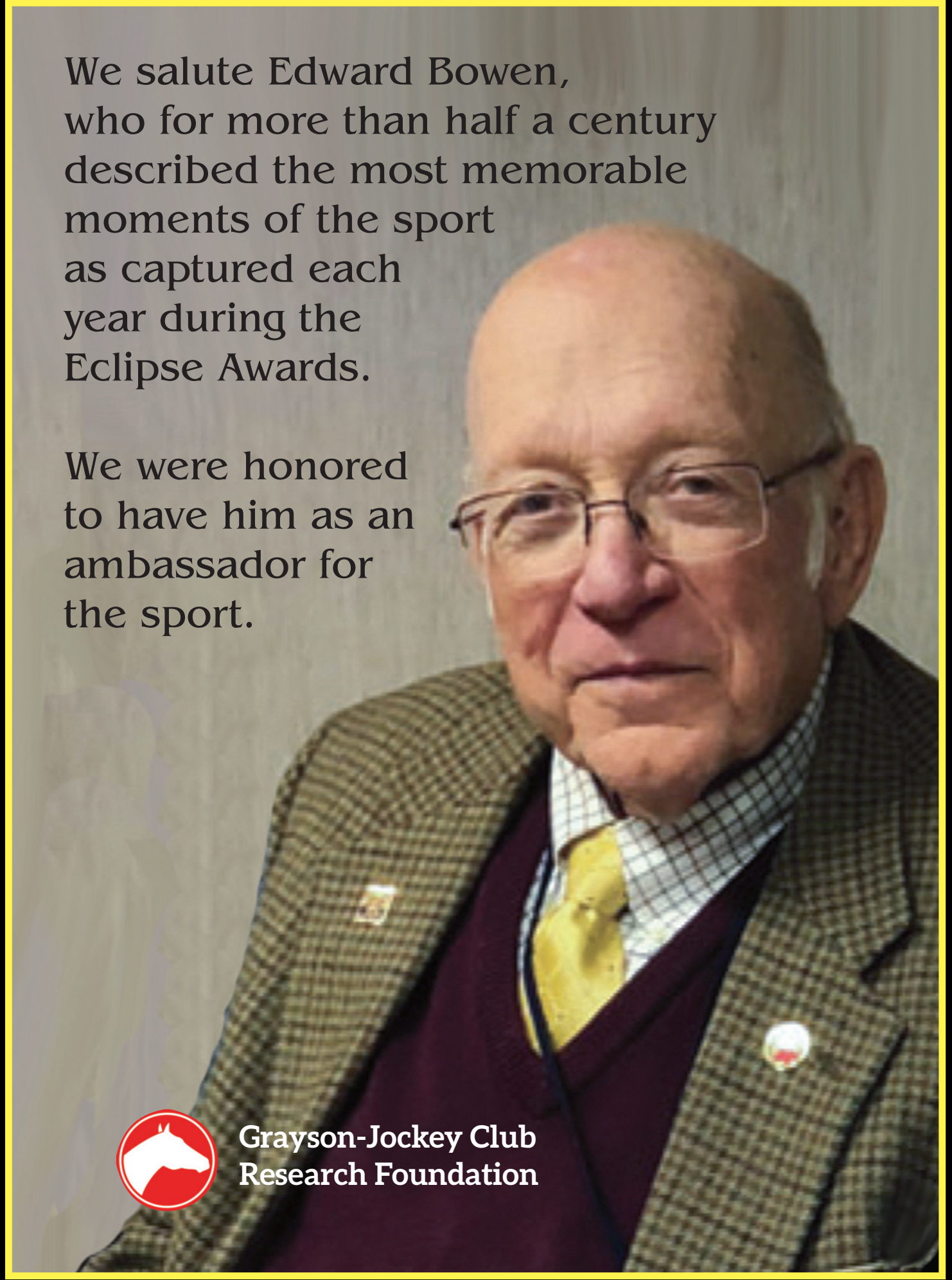
We salute Edward Bowen,
who for more than half a century
described the most memorable
moments of the sport
as captured each
year during the
Eclipse Awards.
We were honored
to have him as an
ambassador for
the sport.
Grayson-Jockey Club
Research Foundation

Foals

The impact on foals born to mares who were fed fish oil supplements during pregnancy has been evaluated in a study

GETTY IMAGES

Mares received treatments beginning on day 310 of gestation through Day 5 post-parturition. According to researchers, samples of plasma were collected from the mares prior to beginning supplementation, on Days 0, 5, and 30 post-partum; milk samples were collected from the mares 12 hours post-partum; and plasma samples were collected from the foals at birth and at 5 and 30 days post-partum.

"Foals born to mares provided with fish oil exhibited increased plasma DHA levels at birth," researchers concluded. "Regardless of the treatment, the plasma DHA content was higher in foals prior to nursing than on days 5 and 30. No treatment differences were observed in the mares' plasma or milk fatty acid composition. The most efficient avenue for increasing neonatal foal DHA levels may be through maternal supplementation with fish oils during late gestation."

One of the common concerns with foals is maintaining health through gastrointestinal upsets. In March 2025, the Irish Veterinary Journal published "Dietary supplementation of new-born foals with free nucleotides positively affects neonatal diarrhea management."

"Foals commonly experience diarrhea in the first weeks of life," explained researchers. "Although this condition is rarely life-threatening, it can have significant health consequences. This study investigated whether new-born foals can

benefit from a dietary supplement of nucleotides, as already demonstrated in other species.

"Dietary nucleotides have positive effects on rapidly proliferating tissues and are considered 'semi-essential nutrients' since cells have only a limited capacity to synthesize these compounds. The aim of this study was to investigate whether providing foals with a dietary nucleotide supplementation, in the form of an oral paste, was able to affect diarrhea incidence, systemic immunity, intestinal microbiota and volatile fatty acid production."

A total of 30 Standardbred foals, from three different farms in the same area, were divided equally into two groups for the study. According to researchers, one group received an oral paste containing dietary nucleotides (NUCL group), while the other received a placebo paste (CTRL group). Fecal and blood samples were collected on Days 1 and 35 after birth.

According to the study, there were no statistical differences in cytokines or fecal calprotectin levels between the two groups. However, the NUCL group showed a lower relative frequency of number of days with diarrhea and greater weight gain compared with the CTRL group. Additionally, researchers noted that total volatile fatty acids, branched volatile fatty acids, acetic acid, propionic acid, butyric acid, succinic acid, and iso-butyric acids in fecal samples were all higher in the NUCL group compared with the CTRL group.

"The management of diarrhea in foals presents a difficult task for both owners and equine veterinarians," concluded researchers. "As such, it is important to find new approaches to prevent and minimize these events. The use of dietary nucleotides in this study successfully decreased the incidence and gravity of diarrhea episodes in newborn foals, as already demonstrated in other species. In addition, the increased growth rate recorded for the supplemented group and the beneficial changes noted in the gut microbiota further support the validity of using dietary nucleotides in these animals.

MALLORY HAIGH

Foals grow at a rapid pace with energy levels trending upward, so their dietary needs are ever changing

"The main limitations in this study were due to the relatively small number of fecal samples for the microbiota analysis and the lack of assessment of the mares microbiota for comparison. In addition, the lack of a vaccination challenge and the short duration of the trial may have concealed longstanding effects of nucleotide supplementation."

Another recent study looked at the impact of a specific strain of a common probiotic bacterium on foals. In October 2023, the Journal of Equine Veterinary Science published "Effects of Lactobacillus rhamnosus Supplementation on Growth Performance, Immune Function, and Antioxidant Capacity of Newborn Foals."

For the study, researchers explored the effects of Lactobacillus rhamnosus GG (LGG) supplementation using 15 newborn foals who were of similar weight and deemed to be in good health. They were randomly assigned to one of three groups: the control; group I, which received 5.0 × 109 CFU/day; and group II, which received 1.0 × 1010 CFU/day. The study spanned 150 days.

"LGG intake increased the daily body height and weight gain of foals aged 120 to 150 days," researchers concluded. "The foals' IgA and IgG plasma levels increased at 30 and 150 days, respectively, and IL-6 plasma level increased at 90 days. Plasma total antioxidant capacity level was significantly higher in test group I than in the control and test group II at 30 days, whereas glutathione peroxidase level was significantly higher in test group II than in the control and test group I at 30 days. Both test groups had significantly higher superoxide dismutase level than the control group and significantly decreased malondialdehyde plasma level at 90 and 150 days. Overall, our findings indicate that dietary supplementation of LGG can improve the growth performance, immune function, and antioxidant capacity of newborn foals."

Even though keeping foals healthy and happy from the inside out is always the goal, studies have found that diarrhea affects more than 50%-60% of them in their first six months of life.

Nucleotide supplements, in the form of an oral paste, were used in a study to determine the impact they had on common gastrointestinal problems in foals

When dealing with such an issue, it is important to know what is helpful and what might not be. In September 2021, Pathogens published the review "Gut Microbiota Manipulation in Foals—Naturopathic Diarrhea Management, or Unsubstantiated Folly?"

"Diarrhea in foals is a problem of significant clinical and economic consequence, and there are good reasons to believe microbiota manipulation can play an important role in its management," explained the review. "However, given the dynamic development of the foal microbiota and its importance in health and disease, any prophylactic or therapeutic efforts to alter its composition should be evidence based. The few clinical trials of probiotic preparations conducted in foals to date show underwhelming evidence of efficacy and a demonstrated potential to aggravate rather than mitigate diarrhea.

Researchers continued on to say: "While prebiotics show initial promise, an even greater scarcity of clinical trials makes it impossible to weigh the pros and cons of their use. Advancing technology will surely continue to enable more detailed and accurate mapping of the equine adult and juvenile microbiota and potentially elucidate the complexities of causation in dysbiosis and disease. In the meantime, fecal microbiota transplantation may be an attractive therapeutic shortcut, allowing practitioners to reconstruct a healthy microbiota even without fully understanding its constitution."

MEETING THE NUTRITIONAL NEEDS OF A GROWING FOAL CAN BE A DELICATE BALANCE. EACH HORSE WILL HAVE DIFFERENT NEEDS, AND IT IS IMPORTANT TO WORK WITH A VETERINARIAN OR EQUINE NUTRITIONIST IF CONSIDERING SUPPLEMENTING A FOAL BEYOND THE NORMAL FEEDING PROTOCOLS. IF DONE CORRECTLY, IT CAN CERTAINLY HAVE BENEFITS, BUT IF DONE INCORRECTLY, HARM MAY ACCIDENTALLY BE INCURRED INSTEAD.

Another major milestone in a foal's life is weaning, and proper nutrition at that time is obviously critical. In April 2025, BMC Veterinary Research published "Effects of different grain types on nutrient apparent digestibility, glycemic responses, and fecal VFA content in weaned foals."

"Artificial weaning, commonly practiced in stall-confined horses, involves separating foals from their mothers earlier and more abruptly than natural weaning, typically between 4 and 7 months of age," explained researchers. "This process represents one of the most stressful periods in a horse's life, influencing feeding behavior, physiological and emotional responses, immune function, and overall growth and development.

"Following weaning, the foal's diet shifts from mare's milk and fodder to complete forage and concentrate supplements. Given their rapid growth and high energy demands, foals require a diet with a higher caloric density, which is typically achieved through grain supplementation."

For the study, 18 male Kazakh foals, weaned at 5 months, were randomly assigned to three groups based on grain type: corn group (CG), oats group (OG), and barley group (BG).

"Results indicated that the apparent nutrient digestibility was lower in OG than in CG and BG," concluded researchers. "However, amylose intake and digestibility were significantly higher in OG compared to CG. Plasma glucose and glucagon levels were elevated in CG relative to OG and BG, while the insulin/glucose ratio was highest in the BG. Additionally, BG increased fecal lactic acid and total VFA (TVFA) concentrations while reducing fecal pH.

"For weaned Kazakh foals, steam-flaked corn could be recommended

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in advance of steam-flaked oats and barley in cereal-based energy supplementation alongside basal forage diets. It may reduce amylose intake, improve glycemic responses, increase plasma glucose levels and reduce fecal lactic acid content."

Just like with older horses, there is no one size fits all dietary plan that suits all foals. Meeting the nutritional needs of a growing foal can be a delicate balance. Each horse will have different needs, and it is important to work with a veterinarian or equine nutritionist if considering supplementing a foal beyond the normal feeding protocols. If done correctly, it can certainly have benefits, but if done incorrectly, harm may accidentally be incurred instead. BH

"At eight to 10 weeks of age, mare's milk alone may not adequately meet the foal's nutritional needs, depending on the desired growth rate...," the AAEP explains