malformed distal femur, severe abdominal hernia, retained testicles, and meningiocele are similar to previous reports of the condition in Galloway calves. This appears to be recurrence of the mutation. Minor differences in phenotype between breeds suggest the mutation is unique, or perhaps that different modifying genes are present in the two cattle populations. Affected calves were born live, but died or were destroyed within a few days of birth.

The second mutation was a dominant mutation in 6 female and 7male calves of 21 offspring of an Angus bull. Parentage in this multiple bull pasture was verified using 11 microsatellite loci. Calves were born with joint laxity and bone fragility. Calves walked on the backs of the pasterns and the majority of calves developed tibial fractures by 6 months of age. Segregation ratio was consistent with an autosomal dominant mutation. Studies to characterize the mutation remain in progress. The joint laxity was similar to bovine marfans. However, no lens abnormalities were seen and the bone fragility is not described with that syndrome. Fibrillin was normal in these calves and a collagen defect is suspected.

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Influence of Seaweed Extract-treated Tall Fescue on Bovine Antioxidant Activity, Immune Response, and Carcass Characteristics

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Introduction

It has been well documented that tall fescue (*Festuca arundinacea*[a]) infected with the endophyte fungus *Neotyphodium coenophialum*[b] is associated with production and health problems in beef cattle. Various approaches to overcome the negative, animal-related effects of the endophyte have been investigated without consistent and/or economically feasible outcome. This multi-location study investigated effects of applying Tasco™ Forage, a proprietary seaweed-based product, to endophyte-infected fescue to improve animal health and production.

Materials and Methods

During a 2-yr period at VA[c] and MS[d] were grazed from April through September or October. Tasco™ was applied (3.4 kg/ha) to endophyte-infected (E+) and endophyte-free (E-) fescue pastures in April and July in a 2 X 2 factorial arrangement of treatments. Each treatment was repeated twice. Pasture was the experimental unit. Monthly body weight and haircoat condition scores were recorded. Select immune cell function tests were performed and serum vitamin and trace mineral concentrations measured, in April, July and September/October. At the termination of grazing all steers were shipped to Texas for feedlot finishing on a common diet. Identical immunological and antioxidant parameters were measured on days 1, 14, 28, and the end of the finishing period. Cattle were slaughtered and carcasses evaluated.

Results and Conclusions

During the grazing period, E+ steers exhibited a deceased ($P<.05$) monocyte phagocytic activity and MHC class II expression, which was reversed by Tasco™ treatment to E+ pastures. Presence of endophyte resulted in lower (P<.01) serum vitamin E levels. Although vitamin E concentration was not significantly influenced by Tasco™ treatment, the seaweed product tended (P<.10) to increase whole-blood selenium in both E+ and E- steers. Upon arrival to the feedlot, monocyte phagocytic and MHC class II activity was higher (P<.01 and P<.08, respectively) in steers that grazed Tasco™ pastures as compared to non-treated pastures. Monocyte immune function was enhanced in E+-Tasco™ steers compared with E+-non-Tasco™ steers, throughout the finishing period. Both E+ and E- Tasco™-treatment steers had higher marbling scores (P<.05) and USDA quality grade (P<.15).

In these studies, Tasco™ application to fescue pastures reversed immunosuppressive effects associated with endophyte-infected fescue, and positively influenced select carcass characteristics. These findings suggest an efficacious and economically feasible approach to alleviating production and health concerns of beef cattle on fescue forage systems.

[a]Schreb
[b]Morgan-Jones and Gams, Glenn, Bacon, and Hanlin
[c]Angus and Angus x Hereford
[d]3/4 Angus, 1/4 Brahman

Alleviating Tall Fescue Toxicosis Problems with Non-toxic Endophytes

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Introduction

In 1943, a cultivar of tall fescue (*Festuca arundinacea*) later known as Kentucky 31[2] was released for sale. This cool season grass became widely distributed in the southeastern United States because it was persistent in the face of drought, grew on poor soils and provided good erosion control, as well as large amounts of forage for hay or grazing.[2] By 1950, it was recognized that animals grazing tall fescue did not perform as well as forage analysis would predict.[2] In 1977, research (Bacon) revealed the presence of an endophyte, *Neotyphodium coenophialum*, in the intercellular spaces of the leaf sheath. Later research connected this endophyte with what is now recognized as fescue toxicosis.[4,5] With the discovery of the endophyte in tall fescue, the solution to the toxicity problem became obvious: remove the endophyte.[1] With endophyte-free fescue, animal performance improved but the plants were not as hardy, and stand loss in endophyte-free fescue became a problem.[3]

Materials and Methods

Our research at the University of Georgia replaced the wild-type endophyte that produces large amounts of ergot alkaloids, primarily erogovaline, with a non-toxic endophyte (NT) that lacks ergot alkaloid production. The tall fescue with NT were tested against the same cultivars containing naturally occurring endophyte (E+) and endophyte free (E-) in a lamb grazing trial during spring 1998 and fall 1999. Using lambs in this trial allowed us to obtain an initial animal toxicosis evaluation with less seed and land resources.

Results and Conclusions

Final data clearly showed that cultivars with NT produced none of the toxic ergot alkaloids in their forage, and the lambs grazing them gained nearly twice the weight of lambs on E+ forage and equal to those grazing E- forage. As further indication of non-toxicity,