

Effect of various combinations of alfalfa and standard layer diet on susceptibility of laying hens to *Salmonella enteritidis* during forced molt.

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Feed deprivation is commonly used by the poultry industry to induce molting and stimulate multiple egg-laying cycles. However, feed deprivation has been observed experimentally to increase susceptibility of poultry to *Salmonella* infections. Previous studies indicated that alfalfa was efficacious in reducing *Salmonella*; the present investigation was designed to evaluate the efficacy of combined alfalfa and layer diets on *Salmonella* colonization. Leghorn hens over 50 wk of age were divided into 12 groups of hens and placed in individual laying cages. One week prior to dietary changes, hens were put on an 8L:16D photoperiod that continued for the 9-d experiment. Hens were challenged orally with 104 cfu of *Salmonella Enteritidis* (SE) on d 4 of treatment and cultured for SE at the termination of the 9-d study. Two independent experiments were conducted consisting of the following treatment groups: nonfed hens, full-fed standard commercial layer diet, 100% alfalfa meal diet, a 90% alfalfa meal/10% standard commercial layer diet, and a 70% alfalfa meal/30% standard commercial layer diet. When evaluating SE colonization in the ceca (Exp. 1), a reduction ($P < 0.05$) was seen in the 100% alfalfa meal diet and the 70% alfalfa meal/30% standard commercial layer diet treatment groups when compared with the controls with Log₁₀ values of 0.54, 0.44, and 2.82, respectively. Evaluation of physiological parameters showed the alfalfa treatment groups had reductions ($P < 0.05$) in weight loss, ovary weight, and feed consumption when compared with the full-fed standard commercial layer diet hens, and these results were comparable with the nonfed hens. In Exp. 2, all of the treatment groups had a reduction ($P < 0.05$) in SE colonization of the ceca when compared with the controls. There were also similar physiological reductions in weight loss, ovary weight, and feed consumption when birds were fed the alfalfa diets in Exp. 2. These data suggest that alfalfa can potentially be combined with layer ration to limit SE infection and still induce a molt comparable with feed withdrawal.