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HISTOPATHOGENESIS OF GIZZARD EROSIONS INDUCED
BY A HEATED CASEIN-HISTIDINE MIXTURE IN BROILER CHICKS

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Histopathogenesis, especially that of the initial lesion, was investigated in gizzard erosions induced by a heated casein-histidine mixture (h-CH) in broiler chicks. The lesions were produced by feeding h-CH to 140 2-day-old male broiler chicks. The experimental diet used contained h-CH at a concentration of 30%. Ten birds each were killed at intervals of 6 or 12 hrs and examined macroscopically, histopathologically and electron-microscopically.

Histologically, initial lesions in the gizzard were observed 30 hrs after feeding and consisted of swelling with supranuclear mucin and mild desquamation of surface cells in the glands. After that, the lesions developed rapidly and were divided roughly into two types. One type was characterized by the trellis-like appearance of the gizzard lining, beneath which there was massive desquamation of the surface cells. The other type was composed of degeneration and necrosis of the mucosal layers, which occurred frequently beneath the intact or eroded lining. Both types of lesions concurred frequently and their transitional features were also present. The necrosis of the mucosal layer developed into ulcers.

Electron-microscopically, degenerative changes occurred in the glandular cells in the middle and upper parts of the glands. The secretory material in the glands was flocculated. Basal cell-like cells proliferated in the basal parts of the glands.

The pH of the gizzard content in the experimental chicks was significantly lower than that in the control chicks.

From these results, it was suggested that the gizzard lesions induced by h-CH were formed by the destruction of the gizzard mucosal layer due to activated gastric acid secretion. In these lesions, repairing and regenerative changes appeared in the gizzard gland cells from the early stages, resulting in their complicated morphology.