Meat Quality and Nutritional Degradation in Rapid-Growth Broilers

Academic research has shown new meat quality problems in the breast muscles of rapid-growth broilers. According to a study in *World’s Poultry Science Journal*: “The ever-increasing genetic pressure to improve growth rates and breast yields of broiler chickens has led to a high incidence of several abnormalities in breast muscles...”

In particular, muscular myopathies called white striping (WS) and wooden breast (WB) are now widespread—causing severe product quality, nutritional and animal welfare problems that are getting worse by the year. In a 2012 study, 55.8% of broilers suffered from WS (47.5% at a moderate level and 8.3% at a severe level). By 2016, those rates had skyrocketed to 96.1% overall (63.8% moderate, 32.3% severe and 2% at a brand new level: extreme). Similarly, in another 2016 study, 96.1% were also affected by WB (48% mild, 28% moderate and 20% severe).

These conditions create necrotic lesions, fibrosis and lipidosis in *pectoralis major* muscle fibers, causing collagen and fat deposits to develop instead of healthy muscle. The result is downgraded meat that may be mostly suitable for further-processed products or, in the most severe cases, discarded entirely.

When comparing normal to severely affected meat there are large degradations in nutritional values—including a 224% fat content increase, a 9% protein decrease, and a 10% collagen increase. Further, in 100 grams of meat affected with WS, the percentage of calories from fat rose from 7% to 21.

With chicken marketed as a lean meat, this is significant. As one study noted: “an increasing share of chicken breast meat currently marketed in form [sic] of cut-up (whole or sliced) can have rather different nutritional characteristics with respect to those reported on the label and to consumer expectations towards poultry meat (e.g. low calories and fat)." These conditions may cause additional animal welfare concerns beyond those already associated with rapid growth. Studies suggest that the degenerative process leading to WS and WB is similar to Duchenne muscular dystrophy in humans. Symptoms of muscular dystrophies include chronic pain, cramping and spasms (NINDS). Given muscles’ homologous nature in both humans and birds, we believe it’s reasonable to infer that WB- or WS-affected broilers (which is now nearly all broilers) suffer from these symptoms.

So what to do about these problems? As one study suggests: “[t]he poultry industry can mitigate the negative effects of abnormalities on meat quality by modulating the growth rate of birds through farming strategies.” Another points out “genetic hybrids characterized by a high Average Daily Growth rate have a higher WS prevalence than the ones characterized by lower ADG.” Indeed, because rapid growth has been shown to play a role in these increasingly problematic areas of product quality, nutritional and animal welfare, one strategy for mitigating them may be a shift to slower-growing broiler breeds.

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