

MICROBIOLOGIC EVALUATION OF DEAD BIRD MEAL

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The process of dry extrusion as an alternative for dead bird disposal has been proposed. The extrusion process provides the potential for animal carcasses, viscera, etc. to be processed and utilized as potential feed ingredients. Because of the nature and condition of the starting material being utilized (dead birds) the question arises "Is it safe to feed dead bird meal to poultry?" The objective of the work reported below was to determine if dead bird meal has the potential for carrying or spreading infectious disease agents.

To determine the effectiveness of the extrusion process to sterilize the starting material (dead birds) a number of tests were performed on pre- and post-extruded material. In our initial studies pre- and post-extruded material was cultured for bacteria and molds. Several samples were collected and inoculated onto culture media routinely used for growing bacteria and molds. In each case, the cultures from the pre-extruded samples were overgrown with bacteria and molds but the cultures from the post-extruded samples were negative. These results strongly suggested that the extrusion process was an effective way of sterilizing feed ingredients.

Although the preliminary studies were encouraging there were still questions about the ability of the extrusion process to inactivate viruses, coccidia, certain bacteria (in particular *Salmonella* spp.) and the effect of "other things" that may escape through the extrusion process and potentially have detrimental effects on the turkey poult. Further studies were designed to address these questions. The experimental design was similar in all the studies in that a preparation of avian infectious disease agents was prepared and added to the pre-extruded materials. Following extrusion, the material was evaluated for the presence of these agents and/or the material was fed to turkey poults and the poults were evaluated for signs of disease and the presence of these agents. The infectious agents which were used included **Salmonella**

typhimurium, coccidian, turkey rotavirus and turkey astrovirus. These infectious agents were prepared in one large volume and added to the pre-extruded material as it was entering the extruding machine. The post-extruded material was then collected in sterile containers and taken back to the laboratory for further evaluation.

At the laboratory, the post-extruded material was cultured for the presence of bacteria and molds, and was examined for the presence of coccidia. In each case the result was negative. In preparation of the feeding trials, groups of poults were placed into presterilized containment isolators. There were four groups of birds as follows: controls, which received only feed and sterile water; post-extruded group, which received post-extruded material incorporated into the feed; post-extruded/culture group, which received post-extruded material incorporated into the feed and were given a bolus of culture media from a 48 hour culture of post-extruded material; infectious agent group, which received the combination of infectious agents given orally at the time of placement. These trials were done using commercial poults and were repeated using specific pathogen free (SPF) poults.

In each experiment the results were the same. Those birds which received the infectious agents died within the first week of the experiment. Those birds which received the extruded material in the feed and the culture material displayed no signs of ill health and appeared as healthy and performed the same as control birds. At necropsy, there were no visible signs or lesions of disease. **Salmonella** cultures were negative and no viruses or coccidian could be demonstrated from the intestinal tract.

From the experimental trials described above, it was concluded that (under the conditions by which the extrusion process was carried out in these studies) feed materials subjected to the extrusion process would not pose a potential problem of transmitting infectious agents.