The animal health and welfare consequences of foie gras production

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Introduction

There is a paucity of quality scientific research that addresses the animal health and welfare outcomes of foie gras production. This industry has drawn significant criticism that is focused on the practice of force-feeding and the resultant effects this has on the liver. There are also more general concerns regarding the overall health, housing conditions, and handling of the birds used for foie gras production. This article summarizes the available information and is intended to raise awareness and stimulate discussion within the veterinary profession.

Foie gras ("fat liver") is produced from the livers of force-fed ducks and geese. Force-feeding is instrumental and necessary for the production of foie gras. France is the largest producer of foie gras in the world. In Canada, foie gras production is a small industry located primarily in the province of Quebec. Traditionally foie gras was produced from special breeds of geese; however, more recently it is primarily produced from the hybrid male Mulard duck, a cross breeding between the male Muscovy duck and a female Pekin-type duck. The Mulard drakes are raised in barns until plumage develops, provided a period of free access to feed such as outdoor grazing, and then moved to intensive housing for force-feeding when birds are 12 weeks of age. The fatty liver condition in ducks (steatosis) required to produce foie gras results from subjecting birds to a period of force-feeding lasting 12 to 15 days. During this period, birds are confined to small individual cages or group pens where they are forcibly fed a high-fat corn mash.

Force-feeding

Force-feeding is used to produce the size and fat content that qualifies a liver as "foie gras" (1). Ducks do not have a crop as most other avian species, but have a large esophagus, the capacity of which can be further increased with repeated filling. During the fattening period, a 15 to 25 cm long tube is inserted into the esophagus, dispensing up to 450 g per meal, typically with 2 or 3 meals per day. The volume of feed the birds receive is significantly in excess of what would be their voluntary intake. The repeated capture, restraint, and rapid insertion of the feeding tube and expansion of the distal esophagus can cause aversion and discomfort during force-feeding and immediately afterward while the esophagus is distended. This is a risk factor for esophageal injury and associated pain (2,3). Because geese and ducks do not have a crop, the increasing amount of feed given prior to force-feeding, and the force-feeding itself cause anatomical and physiological adaptation including expansion of the lower part of the esophagus, increased heat production, panting, and production of semi-liquid feces (4). The risk of damage to stretched tissue is greater than that of normal tissue, but it is not known how great this risk is in force-fed ducks (4).

Force-feeding overrides animal preference and homeostasis. Although ducks may, under some conditions, voluntarily consume large amounts of feed, if force-feeding is interrupted in experimental conditions of foie gras production, drakes will voluntarily fast for a period of 3 days or longer, suggesting that the individual animals have been fed past the point of satiety (5).

Morbidity and mortality

Studies on mortality rates during the 2-week force-feeding period in drakes have been carried out in France, Belgium, and Spain. The mortality rate in force-fed birds varies from 2% to 4% during this period compared with approximately 0.2% in age-matched non-force-fed drakes. There is considerable variation in the figures between farms, batches of animals in farms, and seasons. The underlying causes of this mortality have not been documented, but are thought to be due to physical injury, heat stress, and liver failure (4).

Force-feeding results in an increase in liver size and fat content. By the end of the force-feeding period, the bird's liver is 7 to 10 times the size of a normal liver with an average weight of 550 to 982 g and a fat content of 55.8%. In comparison, the average weight of a liver of a non-force-fed drake is 76 g with a fat content of 6.6 % (6). Increases in liver size and fat content result in impaired hepatocyte function due to decreased hepatic blood flow and other physiologic effects (7,8). There is evidence that the induced steatosis (if not interrupted by slaughter of the animal) would progress causing death if force-feeding was continued beyond the typical 2-week period (8), and that it is reversible if force-feeding is discontinued and ducks are allowed to recover (9).

Housing and handling

During the force-feeding period, birds are kept in small groups on slatted floors or in individual cages, with wire or plastic mesh floors. Individual cage-type housing facilitates efficient

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feed delivery, but restricts movement by not allowing birds to stand erect, turn around, or flap their wings. Birds cannot carry out other natural waterfowl behaviors, such as bathing and swimming (10).

In outdoor goose production in Manitoba, pens are meticulously graded to prevent water accumulation from precipitation as young geese compete aggressively for access to puddles resulting in significant lameness (Whiting TL, Manager Animal Health and Welfare, Manitoba Agriculture and Food, personal communication, 2012). A high percentage of ducks force-fed in individual cages have pressure sores on the sternum and they are more prone to bone fractures during transport and at slaughter (11).

Code of practice

In Canada, the National Farm Animal Care Council is facilitating the development of updated Codes of Practice for the care and handling of farmed animal species (12). The Code development process links recommendations with science and includes broad stakeholder representation with the goal to improve farm animal care. The poultry Codes of Practice (2003) for laying hens and meat birds are currently being updated. The Codes are intended to promote sound management and welfare practices through recommendations and requirements for housing, management, transportation, processing, and other animal husbandry practices. It has been suggested that the industry develop new on-farm foie gras welfare-friendly production standards, such as a Code of Practice. The issues of force-feeding, restrictive housing, and elevated mortality and morbidity would likely need to be resolved to garner the necessary support from the veterinary profession and other stakeholders for the development of such standards to proceed.

Alternative production

It has been suggested that alternative housing and management practices to produce foie gras should be explored. This would involve feeding methods that do not cause stress or discomfort (i.e., no force-feeding) and housing systems that provide adequate space that allow birds to engage in normal behavior conducive to good welfare (13). The increase in liver size or fat content from birds raised in such an alternative production system would likely not result in impaired liver function, thus limiting the risk of increased mortality, morbidity, or discomfort to the bird. Such alternative production methods have not been adequately studied to determine if they would address the negative animal health and welfare risks associated with foie gras production while simultaneously producing a food product that is acceptable to foie gras consumers.

Conclusions

While there is a lack of research on the impact of foie gras production on animal welfare, the available evidence shows that the current feeding and management practices represent risks to animal health and welfare. The practice of force-feeding, the resultant adverse effects on liver function and bird health along with restrictive housing are unacceptable to the veterinary profession and other animal welfare advocates.

References

1. Tome MW. Changes in nutrient reserves and organ size of female ruddy ducks breeding in Manitoba. The Auk 1984;101:830–837.
2. Faure J-M, Guemene D, Guy G, et al. Is there avoidance of the force feeding procedure in ducks and geese? Anim Res 2001;50:157–164.
3. Servière J, Bernadet MD, Guy G, et al. Données neurophysiologiques sur la nociception potentiellement associée à l'ingestion forcée chez le canard mulard, In : Proceedings. 5èmes Journées de la Recherche sur les Palmipedes a Foie Gras 2002:70–75.
4. Scientific Committee on Animal Health and Animal Welfare. Welfare aspects of the production of foie gras in ducks and geese. Adopted December 16, 1998. Available from http://ec.europa.eu/food/fs/sc/scah/out17_en.pdf Last accessed February 12, 2013.
5. Guémené D, Gérard G, Servière V, et al. Force feeding: An examination of available scientific evidence. [Artisan Farmers Alliance Web site]. Available from http://www.artisanfarmers.org/images/Foie_Gras_Study_by_Dr._Guemene.pdf Last accessed February 12, 2013.
6. Babile R, Auvergne A, Dubois JP, et al. 1998. Réversibilité de la stéatose hépatique chez l'oie. 3ème journées de la recherché sur les palmipèdes à foie gras. Bordeaux, 45–46.
7. Bengone-Ndong T. Contribution à l'etude des consequences du gavage de canards sur le devenir des xénobiotiques [thesis]. Toulouse, France : Institut National Polytechnique; 1996.
8. Bogin E, Avidar Y, Merom M, et al. Biochemical changes associated with fatty liver in geese. Avian Pathol 1984 13;4:683–701.
9. Benard G, Bengone T, Prehn D, et al. Contribution à l'étude de la physiologie du canard en gavage : étude de la stéatose hépatique; Bulletin de l'Académie vétérinaire de France, 2006, vol. 159, No. 1, 43–51.
10. Matull A, Reiter K. Investigation of comfort behaviour of pekin duck, muscovy duck and mulard duck. Proc 10th Europ Symp Waterfowl, Halle, March 26–31, 1995, 146–149.
11. Bénard G. Contribution à l'optimisation des productions de pamipèdes gras [Thesis]. Toulouse, France : Institut National Polytechnique; 1992.
12. National Farm Animal Care Council (Home page on the Internet). Available from http://nfacc.ca Last accessed February 12, 2013.
13. Duncan I, Ramsay G, Urton G. The scientific case against foie gras. Available from http://spca.bc.ca/foiegras Last accessed February 12, 2013.