A method of production of boneless chicken wings without cutting skin and muscles

Broiler chicken wings including drumettes and winglets, which contain much less meat than do other parts (including leg and breast) of chicken carcass, are commonly served without deboning. However, if deboned, the value of chicken wing may be improved. For example, eating becomes easier with boneless than with bone-in product. Since many consumers like convenient foods, boneless wings may become more popular than bone-in wings, if they are deboned by an inexpensive method. This paper describes a method of removing bones (i.e., humerus from the drumette and radius and ulna from the winglet) to produce boneless wing products.

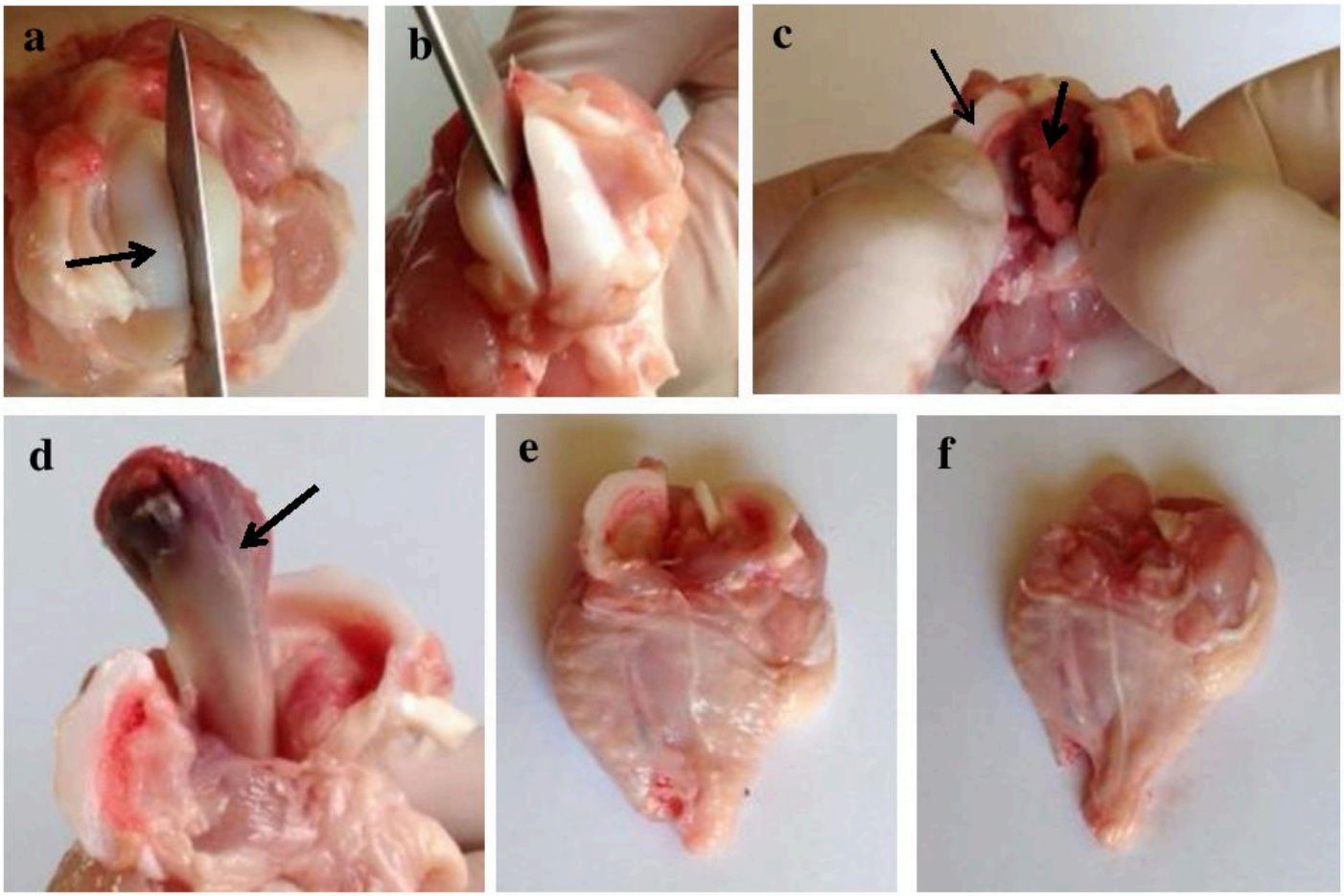

Fig. 1. Deboning of chicken drumette.
a) Splitting humeral head cartilage (arrow). b) Partial dislocation of cartilage from the underlying bone using a stainless steel spatula. c) Complete separation of cartilage (narrow arrow) from the underlying bone (wide arrow) by using fingers before stripping periosteum (a connective tissue sheath surrounding the diaphysis, a shaft of bone). By pulling down the cartilage tissue along the diaphysis, periosteum tissue is separated from the bone. d) Periosteum stripping. Portion of

diaphysis of humerus (arrow) separated from periosteum and cartilage tissues is shown. e) Boneless drumette with attached cartilage. f) Boneless drumette with no cartilage (final product). The final product contains inner space resulting from removal of humerus. A boneless winglet having two inner spaces can be prepared using the same method by removing the ulna and the radius (figure not shown).

A common method of deboning involves cutting skin and muscles to separate bone, whereas in this study, deboning was carried out by dislocating articular cartilage attached to the end of bone followed by stripping periosteum (a connective tissue sheath that surrounds the diaphysis, a shaft of bone) (Fig. 1). This is possible in long bones (such as humerus, radius and ulna) of broiler chickens, which are young rapidly growing birds commonly slaughtered at 6 to 8 weeks of age. In these birds, articular cartilage and periosteum tissues are immature and loosely attached to bone, and thus dislocation of articular cartilage and stripping periosteum may not be very difficult.

For a speedy work, we suggest use of a dual purpose tool composed of a small knife and a stainless steel spatula with flat edge (for cartilage dislocation) attached to the end of the handle of knife. The size of knife, spatula and handle may vary depending on user's preference.

Fig. 2. Cooked bone-in and boneless chicken wing parts.
Top: Mixture of bone-in drumettes and winglets. Left: Boneless drumettes. Right: Boneless winglets. Transverse sections of coocked boneless products show absence of inner space (resulting from bone removal) in either the drumette or the winglet. The transverse sections also showed inner spaces filled with carrots used as fillers.

After deboning, the yield of boneless product was found to be higher with the present method compared to the common method, which resulted in more muscle fragmentation than did the present method. The final product contained inner space formed by bone removal. However, when a cooked product was examined on its transverse section, no appreciable empty space was seen (Fig. 2), indicating that the inner space present, as shown by inserting a filler (Fig. 2) was closed up owing to the heat denaturation of muscle protein during cooking.

The boneless chicken wing products obtained in this study appeared to us to be convenient value-added products that would appeal to many consumers. In addition to ease of consumption, boneless wing products have several advantages over bone-in wing products. They look meatier than bone-in products (Fig. 2), as expected, and require less space for freezing, storage and transportation than bone-in products. Because of larger surface areas resulting from bone removal in the boneless than in the bone-in product, marination may take less time with the boneless product. The inner space seen in the boneless product can be stuffed with food (Fig. 2) to improve the appearance of wing products. The boneless products, which can be sliced or ground, are probably preferred by people (especially the aged) who have limited number of teeth. It was concluded that the method described in the present study is useful for the production of high quality boneless wing products.

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