

Chinese-style Barbecued Duck

Description

Chinese-style barbecued duck, such as Peking duck, is a popular dish that can often be seen hanging in storefront windows of Chinese restaurants. It is known for its moist flesh and thin, crispy skin which is obtained by pumping air beneath the duck's skin to separate it from the fat and by hanging the duck to dry before being roasted. Locally, barbecued duck is available at many Chinese restaurants and grocery stores where it can be purchased by the whole, half or quarter.

How Chinese-style barbecued duck is prepared

Chinese-style barbecued duck is prepared from whole ducks in which the neck and head are left intact. The internal organs of the duck are removed and the lower opening is sewed or pinned closed to hold in the juices and seasoning. Air is pumped underneath the duck's skin to separate the skin and flesh, allowing the fat to render out during roasting. The duck is seasoned and then dipped in or basted with a boiling water mixture containing vinegar and other ingredients. The duck is hung to dry for several hours in a well ventilated space or in front of electric fans. The whole duck is then roasted suspended in an oven until the skin is golden brown and crispy. Once the duck is finished roasting, bungs or pins are removed from the lower opening of the duck and the final product is hung on display until served.



Chinese-style BBQ duck on display in a restaurant window

Potential food safety risks

- Microbiological testing conducted by the State Government of Victoria, Australia Department of Health found that raw ducks were regularly contaminated with low numbers of coagulase-positive staphylococci (<http://www.health.vic.gov.au/foodsafety/research/microbiological.htm>).
- Prior to roasting, the raw duck is hung to dry for several hours often at room temperature. The State of Victoria Department of Health found that if the duck is hung for more than 6 hours at ambient temperatures, bacterial growth starts to increase and cooking the duck will not destroy toxins produced by bacteria such as *Staphylococcus aureus*.
- The finished product is typically hung on display at room temperature, which is in the temperature danger zone of between 4°C [39.2°F] and 60°C [140°F].
- According to *Position Paper on Barbecued South East Asian Style Meats on Display* by Toronto Public Health, tightly wrapping or enclosing the duck after it is removed from the oven can increase condensation within the display case. This condensation can increase the water availability of the duck and support bacterial growth.



Slices of Chinese-style barbecued duck

Food safety legislation

Chinese-style barbecued duck is not specifically addressed in Regulation 562 (Food Premises) made under the *Health Protection and Promotion Act*. However, the Regulation does contain provisions that are applicable:

- Subsection 33(4), states that whole poultry must be cooked to reach an internal temperature of at least 82°C [179.6°F] for at least 15 seconds.
- Subsection 33(2) that states that hazardous foods must be “distributed, maintained, stored, transported, displayed, sold and offered for sale only under conditions in which the internal temperature of the food is, (a) 4°C [39.2°F], or lower; or (b) 60°C [140°F], or higher.”

Associated outbreaks

Based on a review of the literature, there have been no documented cases of foodborne illness attributed to the consumption of Chinese-style barbecued duck.

Safe food handling of Chinese-style barbecued duck

- The Southwest Health District in Georgia, USA recommends that the raw duck be hung to dry in the refrigerator during preparation; the cold air circulation is said to dry the skin faster and also maintain the internal temperature of the duck below 5°C [41°F].
- The State of Victoria Department of Health recommends that the raw duck be dipped in a boiling water mixture containing at least vinegar during preparation. Boiling water will destroy pathogens present on the surface of the duck's skin, and vinegar alters the pH of the skin thereby limiting the ability of pathogens to grow.
- The roasting process is the kill step in the preparation of barbecued duck. According to Toronto Public Health, the whole, uncut product is free of pathogenic microorganisms when it is removed from the oven after roasting.
- According to Toronto Public Health's position paper, barbecued duck can be displayed in the temperature danger zone of between 4°C [39.2°F] and 60°C [140°F] for up to 4 hours providing that the following conditions are met:
 - The duck is cooked to an internal temperature of at least 82°C [179.6°F] for a minimum of 15 seconds.
 - The whole cooked product is transferred immediately to "a clean, fully enclosed, air protective covered 'cool down' cabinet in an area separate from the food preparation and cooking", which can be a display cabinet.
 - A coding system is in place to mark when the ducks were cooked and when they were removed from temperature control.
 - If at any point the duck is cut up, it must be transferred to a different display unit capable of maintaining the product at an internal temperature of at least 60°C [140°F], or it can continue to be held at ambient temperatures for up to the 4 hour limit (total time) provided that additional prescribed conditions are met.
- The Capital Health region in Alberta, Canada approved an application by a food premise for Time as a Public Health Control (TPHC) for Peking duck. The food premise is permitted to display Peking duck at 50°C [122°F] provided that it adheres to strict sanitation protocols and that the products are only to be sold the same day (Hislop *et al.*, 2008).



Storefront display of Chinese-style barbecued duck and various other meat and seafood items

Safe food handling of other Chinese-style barbecued meat and seafood items

Other items are typically also on display with barbecued duck such as soy sauce chicken, roast suckling pork, char siu pork, beef tongue, pork intestines and orange cuttlefish.

- According to Toronto Public Health's position paper, barbecued or roast pork may be displayed under the same conditions as barbecued duck. However, chicken dishes, such as soy sauce or barbecued chicken, must be kept under temperature control at all times (*i.e.*, maintained at an internal temperature of $\leq 4^{\circ}\text{C}$ [39.2°F] or $\geq 60^{\circ}\text{C}$ [140°F]).
- Microbiological testing conducted by the State of Victoria Department of Health found that beef tongue, gizzards and squid were not found to be safe when kept out of temperature control (*i.e.*, on display in the temperature danger zone of between 4°C [39.2°F] and 60°C [140°F]). They recommend that these items either: (a) be kept under temperature control at all times, (b) be refrigerated after 2 hours out of temperature control, or (c) be discarded after 4 hours out of temperature control.