

Ceviche

Description

Ceviche, also spelled cebiche or seviche, is a popular Latin American dish traditionally consisting of raw seafood marinated in lime or lemon juice. The citrus juice firms the flesh of the raw seafood and turns it opaque, giving it the appearance and texture of being cooked. The seafood is then seasoned and combined with ingredients such as tomatoes, onions, garlic, cilantro, and chili peppers. Locally, ceviche is offered as an appetizer at many Latin American restaurants.

Similar dishes

- Poisson cru: a French dish meaning “raw fish”, consisting of raw fish marinated in citrus juice, onion, tomato and coconut milk.
- Lomi lomi salmon: a Hawaiian dish meaning “to rub or massage”, consisting of raw salmon cured in salt for 24 hours, then mixed with lemon juice, onion and tomato.
- Kinilaw: a Filipino dish consisting of raw freshwater fish dipped in vinegar and seasoned with salt and ginger.



Ceviche of shrimp, scallops, and fish

How ceviche is prepared

There are many regional variations in the ingredients and preparation of ceviche. Ceviche can be prepared with: fish such as tilapia, snapper, and grouper; shellfish such as shrimp, scallops, and oysters; and cephalopods such as squid and octopus. The raw seafood is cut into small pieces and marinated in lime or other citrus juice. The length of time the seafood is marinated can range from as little as a few minutes up to 24 hours. The citric acid in the citrus juice denatures the protein molecules in the raw seafood, causing the flesh to become opaque and firm. It is then seasoned and combined with ingredients such as tomatoes, onions, garlic, cilantro, and chilies. Ceviche is served chilled or at room temperature, typically as an appetizer.

Potential food safety risks

- While the acidity of the citrus juice can reduce microbial numbers in the raw seafood, it does not destroy all bacteria, viruses, and parasites that might be present on and in the flesh. According to the 2009 *Food Code* published by the United States Food and Drug Administration (FDA), specific microbial hazards in ceviche include: *Anisakis simplex*, *Diphyllobothrium spp.*, *Pseudoterranova decipiens*, and *Vibrio parahaemolyticus*.
- Pathogens such as Norwalk virus, Hepatitis A virus, or *Salmonella spp.* may also be concentrated in molluscan shellfish harvested from fecal-contaminated water.
- The Center for Disease Control and Prevention (CDC) in the United States recommends that travelers visiting areas with epidemic cholera avoid the consumption of undercooked or raw fish or shellfish, including ceviche, to avoid getting cholera.

Associated outbreaks

- In 2006, seven confirmed cases and one probable case of *Diphyllobothrium latum* were associated with the consumption of raw, marinated perch fillets served at a wedding party in Switzerland (Jackson *et al.*, 2007).



Effect of lime juice on raw shrimp (from left to right): (1) no lime juice, (2) elapsed time: 2 minutes, (3) elapsed time: 10 minutes, (4) elapsed time: 30 minutes

Food safety legislation

Subsection 33(9) of Regulation 562 (Food Premises) made under the *Health Protection and Promotion Act* states that fish intended to be consumed raw is exempt from subsection 33(8) which requires that fish be cooked to reach an internal temperature of at least 70°Celsius for at least 15 seconds.

Safe food handling of ceviche

Food safety guidelines for raw fish dishes such as ceviche are contained in the 2009 FDA *Food Code* :

- Annex 3, section 3-402.11 states that, as an alternative public health control to that which is provided by adequate cooking, fish may be frozen before service to ensure the destruction of parasites. Furthermore, it states that candling or other visual inspection techniques are not adequate to avoid the risk of parasites from fish which have not been frozen.
- Subparagraph 3-402.1(A) states that fish to be offered for sale or service in a ready-to-eat form that is raw (except for molluscan shellfish, some species of tuna and certain aqua-cultured fish) should be “(1) frozen and stored at a temperature of -20°C (-4°F) or below for a minimum of 168 hours (7 days) in a freezer; (2) frozen at -35°C (-31°F) or below until solid and stored at -35°C (-31°F) or below for a minimum of 15 hours; or (3) frozen at -35°C (-31°F) or below until solid and stored at -20°C (-4°F) or below for a minimum of 24 hours.
- Subparagraph 3-801.11(C)(1) states that the sale or service of raw fish and raw molluscan shellfish in food establishments that serve a highly susceptible population should be prohibited.
- Subparagraph 3-603.11(A) states that food establishments that sell or serve shellfish “raw, undercooked, or without otherwise being processed to eliminate pathogens”, should “inform consumers of the significantly increased risk of consuming such foods by way of a disclosure and reminder”, such as through menu advisories and placards.

Who should avoid eating ceviche

Health Canada recommends that pregnant women, the elderly, and people with weakened immune systems avoid the consumption of raw or undercooked seafood.