

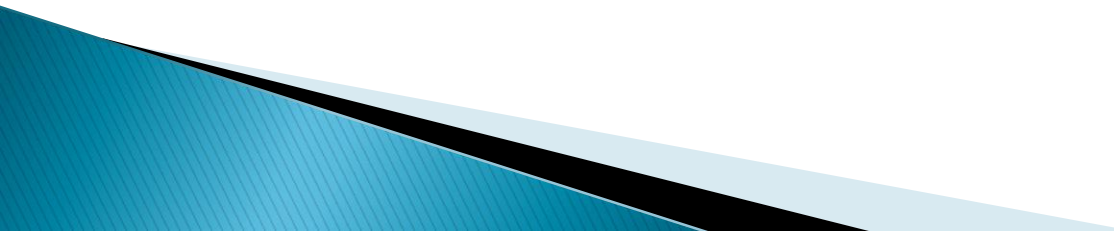
A close-up photograph of a glass filled with orange juice. The glass is garnished with several slices of fresh orange and several ripe raspberries. The background is softly blurred, showing more of the glass and its contents. The overall scene is bright and fresh, suggesting a healthy beverage.

# Gelatin

# Introduction

- Gelatin is a protein substance derived from collagen, a natural protein present in the tendons, ligaments, and tissues of mammals. It is produced by boiling the connective tissues, bones and skins of animals, usually cows and pigs.
- Fish skin and fish bones could be used as a source of gelatin, although gelatin from aquatic sources is not as good as gelatin from animal sources.
- Gelatin's ability to form strong, transparent gels and flexible films that are easily digested, soluble in hot water, and capable of forming a positive binding action have made it a valuable commodity in food processing, pharmaceuticals, photography, and paper production

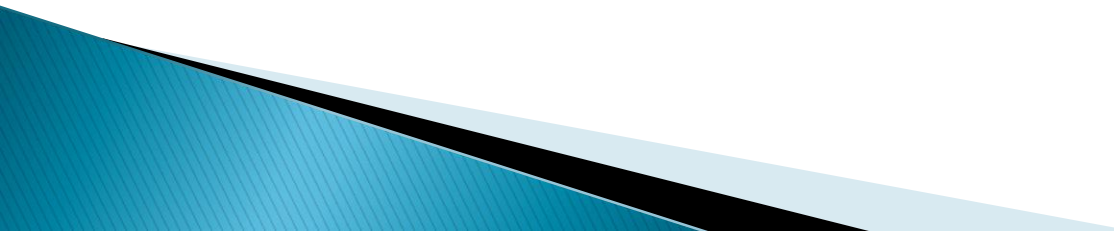
# Properties

- It is colorless or slightly yellow, transparent, brittle, particularly odorless, tasteless sheet, flakes or coarse powder.
  - Gelatin swells up and absorbs 5 to 10 times its weight of water to form a gel in solution below 35 – 40°C.
  - It is soluble in hot water, glycerol, acetic acid, insoluble in organic solvents and is amphoteric.
- 

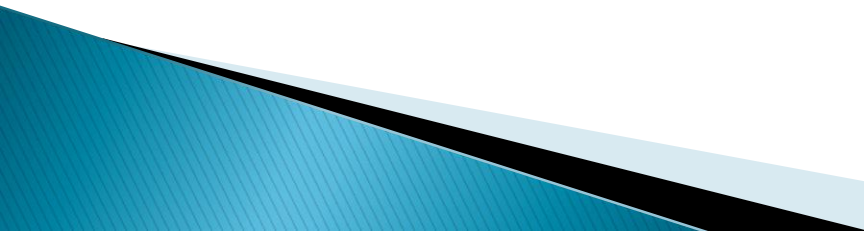
# Production of gelatin from lumpfish

- ▶ 3 sources of lumpfish (*Cyclopterus lumpus*) – lumpfish skin(s), headed and gutted lumpfish(HG) and gutted lumpfish(G) were used to produced lumpfish.
- ▶ The moisture content and pH for the gelatin were very similar to the reference, knox gelatin.
- ▶ However the content of ash was much higher and increased proportionally with inclusion of raw material containing increasing quantities of bones.
- ▶ The amino acid content of the HG sample most closely resemble the reference

# Uses

- ▶ The principal use of gelatin is for increasing the viscosity of aqueous solutions and in the formation of solidified gels.
  - ▶ It is used in food industry in conjunction with other edible ingredients as a gelling, stabilizing, emulsifying, dispersing or thickening agent.
- 

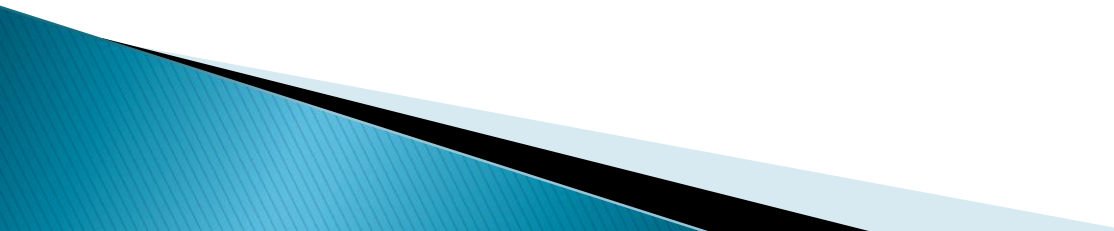
# Contd.....

- Norland (1990) has characterized the applications of gelatin into the following uses:
  - **1.Edible gelatin:** free of heavy metals and aesthetically pleasing for eating.
  - **2.Industrial gelatin:** where the chemical and physical properties are uniquely suitable for industrial application like gelatin used in the microencapsulation of dye precursors for carbonless paper.
- 


# Contd.....

- ▶ **3. photographic gelatin:** the requirements are extremely critical. Photographic film requires a long shelf life. Gelatin has major impact on silver halide chemistry and the ability to take a picture and develop it later under standard developing conditions.
- ▶ **4. Glue:** especially for adhesive or gluing application.
- ▶ Fish gelatin, with the exception of photographic film, has been use in all these applications.
- ▶ Fish gelatin is also used as the base for a light sensitive coating (photoresist) for electronics trade.

# Drawbacks

- ▶ Nutritionally, gelatin is an incomplete protein, since it lacks tryptophan, an essential amino acid.
  - ▶ An animal or human being could survive if it had to subsist on gelatin as its sole source of protein.
  - ▶ However, gelatin is relatively high in lysine and methionine.
- 





**THANK YOU**