Gelatin

Intended Use
Gelatin is used in preparing microbiological culture media.

Summary and Explanation
Gelatin is a protein of uniform molecular constitution derived chiefly by the hydrolysis of collagen.[1] Collagens are a class of albuminoids found abundantly in bones, skin, tendon, cartilage and similar animal tissues.[1]

Koch[1] introduced gelatin into bacteriology when he invented the gelatin tube method in 1875 and the plate method in 1881. This innovation, a solid culture method, became the foundation for investigation of the propagation of bacteria.[1] However, gelatin-based media were soon replaced by media containing agar as the solidifying agent.

Gelatin is used in culture media for determining gelatinolysis (elaboration of gelatinases) by bacteria. Levine and Carpenter[2] and Levine and Shaw[3] employed gelatin media in their studies of gelatin liquefaction. Garner and Tillett[4] used culture media prepared with gelatin to study the fibrinolytic activity of hemolytic streptococci.

Gelatin is a high grade gelatin in granular form which may be used as a solidifying agent or may be incorporated into culture media for various uses. Gelatin is used in Nutrient Gelatin, Motility GI Medium, Stock Culture Agar and Dextrose Starch Agar. A 0.4% gelatin medium is used in the presumptive differentiation of *Nocardia brasiliensis* from *N. asteroides* (see Nocardia Differentiation Media). Media containing gelatin are specified in standard methods[5,6] for multiple applications.

Principles of the Procedure
The melting point of a 12% concentration of gelatin is between 28 and 30°C, which allows it to be used as a solidifying agent. Certain microorganisms elaborate gelatinolytic enzymes (gelatinases) which hydrolyze gelatin, causing liquefaction of a solidified medium or preventing the gelation of a medium containing gelatin. Gelatin is also used as a source of nitrogen and amino acids.

Procedure
See appropriate references for specific procedures using gelatin.

Expected Results
Refer to appropriate references and procedures for results.

References

1. Gershenfeld and Tice. 1941. J. Bacteriol. *41*:645.
2. Levine and Carpenter. 1923. J. Bacteriol. *8*:297.
3. Levine and Shaw. 1924. J. Bacteriol. *9*:225.
4. Garner and Tillett. 1934. J. Exp. Med. *60*:255.
5. U.S. Food and Drug Administration. 2001. Bacteriological analytical manual, online. AOAC International, Gaithersburg, Md.
6. Eaton, Rice and Baird (ed.). 2005. Standard methods for the examination of water and wastewater, 21st ed., online. American Public Health Association, Washington, D.C.

Availability
Difco™ Gelatin

Cat. No.	214340	Dehydrated – 500 g
	214320	Dehydrated – 10 kg

User Quality Control

Identity Specifications
Difco™ Gelatin

Dehydrated Appearance:	Light beige, free-flowing, homogeneous.
Solution:	12% solution, soluble in purified water upon slight heating in a 50-55°C water bath. Solution is light amber, clear to slightly opalescent, may have a slight precipitate.
Prepared Gel:	Very light amber, clear to slightly opalescent, may have a slight precipitate.
Reaction of 2% Solution at 25°C:	pH 6.8 ± 0.2

Cultural Response
Difco™ Gelatin

Prepare a 12% Gelatin solution in 0.8% Nutrient Broth. Dispense into tubes and autoclave. Inoculate and incubate at 35 ± 2°C under appropriate atmospheric conditions for 18-48 hours or for up to 2 weeks for the gelatinase test. To read gelatinase, refrigerate until well-chilled and compare to uninoculated tubes. Tubes positive for gelatinase will remain liquid.

ORGANISM	ATCC™	INOCULUM CFU	RECOVERY	GELATINASE
Bacillus subtilis	6633	10^2-10^3	Good	+
Clostridium sporogenes	11437	10^2-10^3	Good	+
Escherichia coli	25922	10^2-10^3	Good	–

Uninoculated Tube

Bacillus subtilis ATCC™ 6633