

Test bank - lipids

By Hind Shaker Suhwail , modified by Dana Hijjeh

اللهم كن لأهلنا في غزة عوناً ونصيراً  

Q1. In which of the following solvents would you expect lipids to be most soluble?

- A. Water
- B. Ethanol
- C. Chloroform
- D. Saline solution

Q2. Which of the following fatty acids would have the highest melting point?

- A. Stearic acid
- B. Oleic acid
- C. Linoleic acid
- D. Palmitic acid

Q3. Which structural feature of fatty acids has the greatest impact on decreasing their melting point?

- A. Increase in the number of carbon atoms
- B. Increase in the number of double bonds
- C. Presence of trans double bonds
- D. Length of the hydrocarbon tail

Q4. Which statement about fatty acids is correct?

- A. Unsaturated fatty acids have higher melting temperature than saturated fatty acids.
- B. Melting temperature of the C16 fatty acid is lower than for C14 fatty acid;
- C. Saturated fatty acids have multiple double bonds.
- D. The higher the degree of unsaturation the lower the melting temperature of fatty acid.

Q5. A new food preservation technique involves using fatty acids that are solid at room temperature and have relatively low water solubility. Which type of fatty acids would be most suitable?

- A. Short-chain fatty acids
- B. Medium-chain fatty acids
- C. Long-chain fatty acids
- D. Very long-Chain fatty acids

Q6. In an experiment, a researcher wants to test the volatility of fatty acids in a controlled environment. Which of the following fatty acids would most likely require the lowest temperature to evaporate?

- A. Palmitic acid
- B. Stearic acid
- C. Butyric acid
- D. Capric acid

Q7. A new biodegradable packaging material is being developed to be both water-resistant and structurally strong at room temperature. Which fatty acids' properties would be least desirable for this application?

- A. Short-chain fatty acids
- B. Medium-chain fatty acids
- C. Long-chain fatty acids
- D. poly-saturated fatty acids

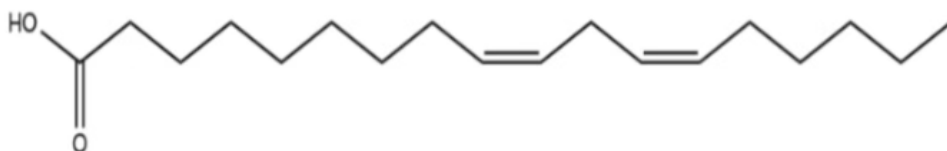
Q8. Which of the following describes the structure of linoleic acid?

- A. 18:0
- B. 18:1
- C. 18:2
- D. 18:3

Q9. Which fatty acid has the structure 20:4 and is an important precursor in the biosynthesis of eicosanoids?

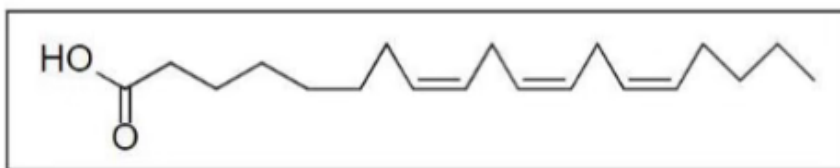
- A. Stearic acid
- B. Arachidonic acid
- C. Linoleic acid
- D. Palmitic acid

Q10. What is the name of the fatty acid shown ?



- I. 18:2 $\Delta^{9,12}$ *cis,cis*-9,12 octadecadienoic acid
- II. 16:1 Δ^9 *cis*-9-Hexadecenoic acid
- III. 18:2 $\Delta^{10,13}$ *cis,cis*-10,13 octadecadienoic acid
- IV. 18:3 $\Delta^{9,12,14}$ *cis, cis, cis*-9,12,14 octadecadienoic acid
- V. 18:2 $\Delta^{9,12}$ *cis,trans*-9,12 octadecadienoic acid

Q11. What is the nomenclature of the fatty acid shown in the box



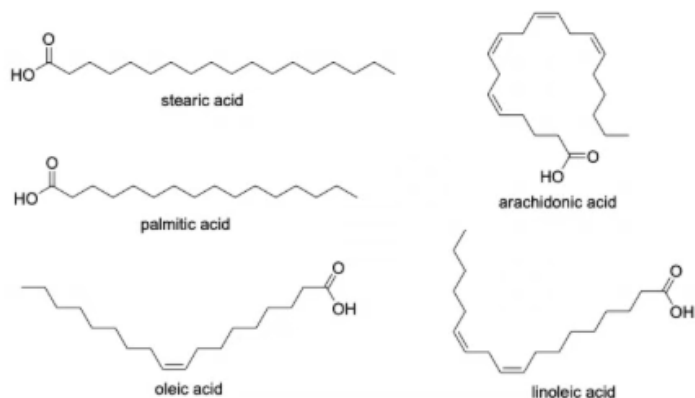
A. 19:3 (Δ 9,12,15)

B. 20:3 (Δ 9,12,15)

C. 20:4 (Δ 5,8,11)

D. 19:3 (Δ 8,11,14)

Q12. Which the following fatty acids have the highest melting point



A. Stearic acid

B. Arachidonic acid

C. Palmitic acid

D. Linoleic acid

E. Oleic acid

Q13. Which is an example of an eicosanoid?

A. Testosterone

B. Prostaglandin

C. Spingolmyelin

D. Wax

Q14. Which is the precursor to the eicosanoids?

- A. Cholesterol
- B. Progesterone
- C. Arachidonic acid
- D. Triglycerides

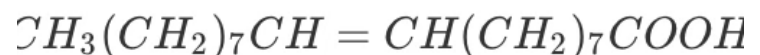
Q15. Eicosanoids do not include…?

- A. Leukotrienes
- B. Hydrocortisones
- C. Thromboxanes
- D. Prostaglandins

Q16. Which of the following statements about oleic acid is false?

- A. It is a fatty acid with an $\Delta 9$ unsaturation
- B. There are 16 carbon atoms in its longest chain

C. Its condensed molecular formula



- D. None of the answers is false

Q17. You're planning a balanced diet for an astronaut on a long mission. Which essential fatty acid must be included to ensure the astronaut can produce arachidonates for inflammatory response regulation?

- A. linolenic acid
- B. Oleic acid
- C. Linoleic acid
- D. Stearic acid

Q18. Imagine you're designing an infographic for a health website about the effects of aspirin on blood clotting. Which key molecule's production is inhibited by aspirin, leading to reduced platelet aggregation?

- A. Prostaglandins
- B. Thromboxane
- C. Arachidonic acid
- D. Cyclooxygenase 2

Q19. Which specific enzyme does Celebrex selectively inhibit to reduce inflammation with potentially fewer gastrointestinal side effects?

- A. COX1
- B. COX2
- C. Thromboxane synthase
- D. EPA

Q20. You are working in a lab analyzing snake venom. You discover that it contains an enzyme that hydrolyzes lecithin. Which enzyme have you identified in the snake venom?

- A. Amylase
- B. Lecithinase
- C. Protease
- D. Lipase

Q21. What product is formed when lecithinase from snake venom hydrolyzes lecithin?

- A. Free fatty acids
- B. Lysolecithin
- C. Sphingosine
- D. Ceramide

Q22. While studying membrane lipids, you discover that one type is the most abundant in cellular membranes. Which lipid is this?

- A. Phosphatidylcholine
- B. Phosphatidylserine
- C. Phosphatidylinositol
- D. Cardiolipin

Q23. Why are waxes not easily hydrolyzed and considered indigestible?

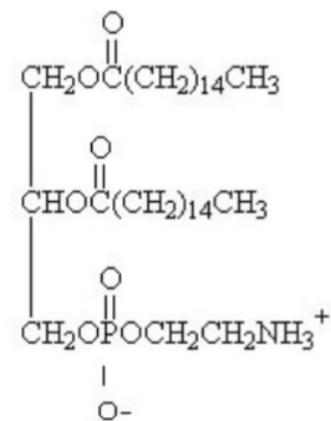
- A. They contain short-chain fatty acids.
- B. They are composed of complex carbohydrates.
- C. They consist of long-chain alcohols and fatty acids.
- D. They are highly reactive and easily broken down.

Q24. Why are emulsifying agents effective in maintaining the stability of nonpolar substances in aqueous solutions?

- A. They create a hydrophobic barrier around nonpolar molecules.
- B. They reduce the viscosity of the aqueous phase.
- C. They surround nonpolar molecules with a hydrophilic exterior and hydrophobic interior.
- D. They alter the pH of the solution to favor nonpolar substances.

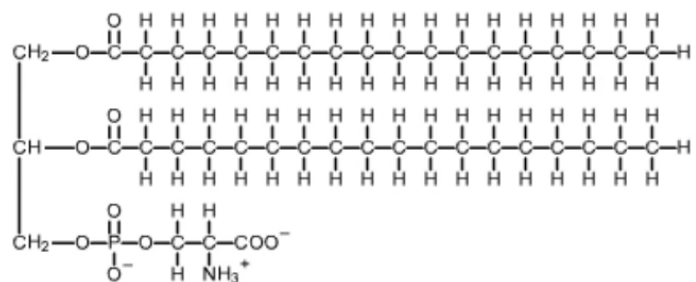
Q25. The components of the following membrane lipid are..?

- A. sphingosine, palmitic acid, phosphate, and choline.
- B. sphingosine, palmitic acid, phosphate, and serine.
- C. glycerol, palmitic acid, phosphate, and ethanolamine.
- D. glycerol, palmitic acid, phosphate, and galactose.



Q26. Identify the following glycerophospholipids

- A. lecithin
- B. Cephalin
- C. Plasmalogens
- D. Cardiolipins



Q27. Which precursor is essential for the synthesis of plasmalogens?

- A) Glycerol-3-phosphate
- B) Phosphatidylcholine
- C) Dihydroxyacetone phosphate
- D) Sphingosine

Q28. In the context of cell membrane composition, what makes phosphatidyl inositol distinct from other phospholipids?

- A) Its unique fatty acid composition
- B) The presence of inositol as its nitrogenous base
- C) Its role in energy metabolism
- D) Its ability to form lipid bilayers independently

سَتَحْيَا الْقُدُسُ وَيُورِقُ مَا ذَبَلَ..
 وَتَنْصُرُ أُمَّةٌ قَدْ عَزَّهَا اللَّهُ بِالْإِيمَانِ.

Answers key

- 1. C**
- 2. A**
- 3. B**
- 4. D**
- 5. B**
- 6. C**
- 7. A**
- 8. C**
- 9. B**
- 10. A I**
- 11. D**
- 12. A**
- 13. B**
- 14. C**
- 15. B**
- 16. B**
- 17. C**
- 18. B**
- 19. B**
- 20. B**
- 21. B**
- 22. A**
- 23. C**
- 24. C**
- 25. C**
- 26. B**
- 27. C**
- 28. B**