2023 Ch H2 Q8

Section: Chemistry in Society

Topic: Food Chemistry / Additives

Question Summary

Dog food contains fats, oils, fatty acids, flavour and aroma molecules, proteins, water, antioxidants and emulsifiers. Explain the role of these compounds in maintaining shelf life, appearance, texture, and nutritional value.

Worked Solution

According to the SQA Marking Instructions for 2023 H2 Q8:

• Fats and oils: supply energy, aid texture, and provide essential fatty acids.
• Fatty acids: required for cell membranes and metabolism; some are essential (cannot be synthesised).
• Proteins: supply amino acids for growth, repair, and maintenance of tissues.
• Flavour and aroma molecules: improve

palatability and encourage dogs to eat the food.
• Water: provides hydration and helps maintain correct texture/consistency of the food.
• Antioxidants: prevent oxidation of fats/oils, slowing rancidity and extending shelf life.
• Emulsifiers: stabilise mixtures of fat and water, ensuring uniform texture and preventing separation.

Final Answer

Fats and oils provide energy and texture; fatty acids support metabolism; proteins provide amino acids; flavour/aroma molecules aid palatability; water maintains texture; antioxidants extend shelf life; emulsifiers prevent separation.

Revision Tips

• Essential nutrients in pet food mirror those for humans: proteins, fats, water.
• Oxidation causes rancidity in fats; antioxidants delay this process.
• Emulsifiers are key in processed foods to stabilise fat-water mixtures.
• Always link compound type → function when answering applied chemistry questions.