

科目：專業英文

系所組：食品科學系

I. The following article is an abstract of a scientific paper published in Journal of Agricultural and Food Chemistry in 2011.

The effect of arabic gum (AG) and xanthan gum (XG) on the physicochemical properties of 2% pesticide avermyctin in oil in water emulsions was systematically investigated by measuring creaming stability, droplet size, zeta potential (surface charges of particles), and rheology. Addition of AG and XG had significant influence on the physicochemical properties of emulsions. Emulsions showed high stability throughout the storage time in the AG concentration range of 0-0.14%. In contrast, addition of XG induced the apparent creaming of emulsion as the XG concentration increased from 0.011 to 0.15%, which might be well explained by the depletion flocculation of droplets. The droplet diameter increased progressively with increasing AG concentration; however, it sharply grew initially with XG concentration and reached a maximum, followed by a gradual decrease. Zeta potential increased gradually as AG concentration was lower than 0.081%, followed by a slight decrease, whereas it reduced dramatically as XG concentration increased from 0.011 to 0.040% and then remained almost unchanged. In the AG concentration range of 0-0.14%, the emulsion exhibited typical Newtonian flow behavior and the viscosity decreased a little. The XG emulsion exhibited Newtonian flow behavior at low XG concentrations ($<0.019\%$), whereas, non-Newtonian flow behavior was displayed at relatively high XG concentrations ($>0.019\%$), wherein viscosity value and yield value increased gradually as XG concentration increased. In addition, the curves of shear stress versus shear rate for XG emulsion and solution were well fitted by a power law model and the Herschel-Bulkley model; the Herschel-Bulkley model fitted much better. The present study would provide useful information for the reasonable application of AG and XG in making stable pesticide emulsion.

26. Where is the possible original source of the above article?
- A. a pesticide company. B. a paper company.
C. a scientific publisher. D. a traveling agent called Agricultural and Food Chemistry.
27. What is the most likely topic of this abstract?
- A. Stability of a Pesticide Prepared by Oil in Water Emulsion.
B. Creaming stability and Rheology of Pesticide in O/W Emulsion.
C. How to make an Oil in Water Emulsion to Stabilize Pesticide?
D. Effect of Arabic Gum and Xanthan Gum on the Stability of Pesticide in Oil in Water emulsion.
28. Addition of Arabic gum in the concentration of 0.08% can
- A. increase the storage stability of the emulsion.
B. increase the viscosity of the emulsion.
C. exhibit a non-Newtonian flow behavior.
D. show a low zeta potential of the emulsion droplets.
29. Addition of xanthan gum in the concentration of 0.1%
- A. did not show any creaming of emulsion.
B. show a slight decrease in zeta potential of the emulsion droplets as compared to that of 0.011%.
C. exhibit a non-Newtonian flow behavior.
D. destabilize the emulsion.
30. The role of arabic gum or xanthan gum on the oil in water emulsions:
- A. neither arabic gum nor xanthan gum acts as a stabilizer.
B. only xanthan gum acts as a stabilizer.
C. both gums act as stabilizers.
D. only arabic gum acts as a stabilizer.

※ 注意：1. 考生須在「彌封答案卷」上作答。

2. 本試題紙空白部份可當稿紙使用。

3. 考生於作答時可否使用計算機、法典、字典或其他資料或工具，以簡章之規定為準。

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31. Depletion flocculation of emulsion droplets
- A. is a phenomenon of stable emulsion.
 - B. can be resulted from increasing the concentration of xanthan gum higher than 0.011%.
 - C. is resulted from addition of arabic gum.
 - D. is a common phenomenon of food emulsion.

32. What might **not** be a key word for this abstract?
- A. gum.
 - B. apparent creaming.
 - C. emulsion stability.
 - D. droplet diameter.

II、Select the best answer for each question:

33. The tests used to determine if foods are allergenic are
- A. Immunological.
 - B. Toxigenic.
 - C. Enzymatic.
 - D. pharmaceutical.

34. Phytochemicals
- A. are plant-derived substances.
 - B. are recognized by all scientists to promote health and longevity.
 - C. are plentiful in dairy products like cheese.
 - D. are only be present in foods that are raw and unprocessed.

35. Alpha, beta, delta, and gamma refer to four forms of
- A. sucrose polyester.
 - B. tocopherol.
 - C. lean textured protein.
 - D. dietary fiber.

36. A 30% sucrose-in-water solution is equivalent to _____ Brix on a weight/weight basis.
- A. 30 ppm.
 - B. 30 degrees.
 - C. 30 percent.
 - D. 30 parts.

37. Explain the role of fat in a meat (O/W emulsion).
- A. Fat creates a gel in the emulsion.
 - B. Fat is the main component of the water soluble dispersed phase.
 - C. Fat comprises the dispersed phase of the emulsion.
 - D. Fat acts as a preservative.

38. simple disaccharide consists of only glucose molecules.
- A. maltose.
 - B. amylose.
 - C. sucrose .
 - D. lactose.

39. Which statement regarding lipids is true?
- A. Triglycerides are composed of one fatty acid and three glycerols.
 - B. Lipids are insoluble, hydrophilic compounds.
 - C. Most food lipids are triglycerides.
 - D. Lipids are polar molecules.

40. An intermolecular hydrogen bond
- A. occurs between two water molecules.
 - B. occurs between the H and O atoms within a water molecule.
 - C. is an example of an ionic bond.
 - D. results in the formation of anions and cations.

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41. Which statement is true regarding myoglobin?
A. Myoglobin contains six pyrrole units.
B. The heme portion of myoglobin is complexed to Mg.
C. The heme portion of myoglobin is composed of amino acids.
D. Myoglobin is a globular polypeptide.
42. The following functional ingredient would be used as a non-polysaccharide texturizing agent:
A. carrageenan. B. maltodextrin.
C. pectin. D. gelatin.
43. The sweetness of sugars is proposed to be due to the presence of an _____ structure of the _____.
A. electronegative / tastant. B. AH and B theory/ tastant.
C. electropositive / tastant. D. AH and B theory / tongue.
44. Which additives act as preservatives?
A. antimicrobials. B. colorants.
C. dough strengtheners. D. humectants.
45. This unit operation refers to the removal of moisture from a food in order to concentrate its solids:
A. refrigeration. B. heat exchange.
C. drying. D. evaporation.
46. Spray drying of egg to produce egg white crystals is accomplished at 113-122°F, which is in the danger zone for bacterial growth. Which of the following statements is true?
A. The low water activity, however, inhibits microorganisms.
B. This temperature range is equivalent to 55-60°C.
C. The presence of egg foam acts as an antimicrobial agent.
D. Product shelf life is unaffected by the process.
47. The random distribution of two fatty acids via _____ results in a total _____ different triglycerides.
A. interesterification; 6.
B. fractionation; 8.
C. esterification; 6.
D. interesterification; 8.
48. What is true about breadmaking?
A. Nongluten proteins are most critical for dough formation.
B. Patent flour is not suited to most breadmaking applications due to its high protein content.
C. Undermixing disrupts the gluten network.
D. Dough characteristics are dependent upon glutenin and gliadin.
49. Which choice is **not** related to the microwave heating?
A. very high energy photons.
B. high frequency.
C. long wavelength.
D. 2450MHz.
50. Chronic toxic effects occur
A. Quickly.
B. Over a few hours.
C. Over a few weeks or longer.
D. Over the course of a meal.

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