

25 multiple choices Questions.

1. **Terpenes are the largest class of natural products in _____.**
 - a. plants
 - b. nature
 - c. cannabis
 - d. all of the above

2. **There are approximately over _____ terpenes in nature.**
 - a. 10
 - b. 100
 - c. 1000
 - d. 55,000

3. **Terpenes and Terpenoids can be used interchangeably to refer to the class of natural products built from 2 isoprene units.**
 - a. True
 - b. False

4. **Technically Terpenes are only _____, while _____ modified by an extra atom usually an oxygen (oxygenated).**
 - a. terpenoids, hydrocarbons
 - b. aromatic, terpene
 - c. hydrocarbon, terpenoids
 - d. double bond, linear

5. **Historically, oleoresin (conifer resin components) was commercially significant in the _____ industry.**
 - a. CBD
 - b. navel
 - c. clothing
 - d. cannabis

6. **Terpenes (terpenoids) are classified as plant natural products.**
 - a. True
 - b. False

7. **Taxol (Paclitaxel) is “terpene success story” example of a diterpene that has been utilized as a chemotherapeutic drug in breast cancer and ovarian cancer treatment.**
 - a. Taxol
 - b. aspirin
 - c. THC
 - d. CBD

- 8. Cannabinoids are a class of compounds found specifically in the Cannabis plant, which are _____ derived from the _____ biosynthetic pathway that produces terpenes.**
- completely, same
 - same, partially
 - none of the above
 - partially, same
- 9. Terpenes are made (biosynthesized) by adding _____ units (the basic building blocks), together in a head-to-tail fashion to produce a very large class of compounds.**
- C₁₀ (10 carbon atoms)
 - alkane
 - isoprene (C₅ = 5 carbon atoms)
 - cannabinoid
- 10. The terpene class of compounds called “sesquiterpenes” are made up of three isoprene units and contain _____ carbons atoms.**
- 5
 - 10
 - 15
 - 20
- 11. Pinene, limonene, menthol, and camphor are all _____.**
- hemiterpenes
 - monoterpenes
 - sesquiterpenes
 - diterpenes
- 12. Vitamin A (retinol) is a classified as _____.**
- hemiterpenes
 - monoterpenes
 - sesquiterpenes
 - diterpenes
- 13. A terpene that is biosynthesized by animals is _____.**
- glucose
 - cholesterol
 - tryptophan
 - acetic acid

- 14. Primarily the essential oils (such as rosemary oil or lavender oil) are composed of a number of _____ and _____ and are volatile (aromatic).**
- Monoterpenes, sesquiterpenes
 - Diterpenes, triterpenes
 - Hemiterpenes, tetraterpenes
 - Polyterpenes, hemiterpenes
- 15. Plants produce essential oils to protect selves from _____ infection.**
- bacterial
 - viral
 - fungal
 - all of the above
- 16. Plant and fungal terpenes function in nature as**
- phytoalexins (plant defense against plant pathogens)
 - phytotoxins
 - pheromones
 - all of above
- 17. Plant and fungal terpenes have _____ medicinal properties**
- anti-tumor, antiviral, antimicrobial
 - antimicrobial, insecticidal
 - a and b
- 18. The five typically most common terpenes found in cannabis are:**
- cymene, cedrene, pugelone, limonene, sabene
 - myrcene, linalool, limonene, pinene, trans-caryophyllene
 - sabene, limonene, menthol, carene, bisabolene
 - myrcene, cedrene, nerolidol, eucayptol, phytol
- 19. Forest Bathing (Shinrin-yoko) is a popular Japanese therapy, in which you walk in the woods for 2 hours, has scientifically been shown to improve sleep and other health benefit.**
- True
 - False
- 20. In the journal article by Cho 2017, the top terpenes a person is typically exposed to during forest bathing (Shinrin-yoko), which were also reviewed for their scientific medical benefit properties (anti-inflammatory, anti-tumorigenic, and neuroprotective) were the following:**
- cymene, cedrene, pugelone, limonene, sabene
 - myrcene, linalool, limonene, pinene, trans-caryophyllene
 - sabene, limonene, menthol, carene, bisabolene
 - α -pinene, myrcene, d-limonene, β -phellandrene, camphene

- 21. B-caryophyllene has been scientifically reported to be a selective _____ agonist.**
- CB₁
 - CB₂
 - CB₃
 - CB₄
- 22. Terpenes are one of the _____ players of the endocannabinoid system.**
- endogenous
 - botanical
 - animal
 - exogenous
- 23. Terpenes typically make up between _____ % or less of the cannabis plant.**
- 30 - 35%
 - 15 - 20%
 - 5 - 10%
 - 1 - 3%
- 24. We briefly discussed an interesting article called the “Terpene Story”. This article discussed the toxicants formed in dabbing of cannabis and was primarily focused on the degradation products of a specific terpene – myrcene – that were reported consistent with degradation products found in atmospheric chemistry literature and are know to be toxic.**
- True
 - False
- 25. Some of the degradation products identifying due to dabbing terpenes are**
- Isoprene C5 compounds
 - ethanol
 - methacrolein and benzene
 - acetic acid

BONUS QUESTIONS

- 26. Terpenes are one of the _____ players of the endocannabinoid system**
- endogenous
 - botanical
 - animal
 - exogenous

27. The main method for terpene extraction is

- a. Hydrocarbon extraction
- b. CO2 extraction
- c. Steam distillation

28. It is mandatory in the US to test the terpenes chemo profile and concentration and reports those on the product label of your cannabis products,

- a. True
- b. False