

PNS-Biochemistry

Archive

Lecture 3

Biochemistry of Taste

1. One of the following is NOT TRUE regarding taste bud components:
- a. Taste receptor cells are modified neuroepithelial cells which are innervated by nerve fibers at the basal end.
 - b. Taste pore is close to the apical end of the taste receptor cells.
 - c. Basal cells are epithelial cells which migrate from adjacent tissue and replace old supporting cells every 10 days.
 - d. Microvilli contain ion channels or GPCR receptors.
 - e. Tastants are chemical compounds which can stimulate taste receptor cells through binding to specific receptors on the surface of microvilli.

Ans: c

2. Sweet taste is mediated by:
- a. cGMP response only
 - b. cAMP response only
 - c. IP3 response only
 - d. Both cAMP and IP3 responses
 - e. Both cAMP and cGMP responses

Ans: d

3. The second messenger which mediates the bitter taste is _____?

- a. cAMP
- b. cGMP
- c. IP3
- d. PIP2
- e. ATP

Ans: c

4. IP3 acts as a second messenger in:

- a. Both sweet and bitter tastes.
- b. Only sweet taste.
- c. Only bitter taste.
- d. Neither sweet nor bitter tastes.
- e. Umami taste only.

Ans: a

5. Which of the following is not associated with sour taste?

- a. G-protein
- b. Hydrogen ions (H^+)
- c. Acid-sensing ion channels (ASICs)
- d. Direct ion channel activation
- e. pH changes

Ans: a

6. All of the following are true about taste buds and taste receptors except:

- a. Taste receptor cell is an elongated spindle cell that renews every 10 days.
- b. Basal cell renewal.
- c. Microvilli at the basal surface.
- d. Neuroepithelial cell with apical and basal surfaces.
- e. When depolarized, releases neurotransmitter.

Ans: c

7. All of the following about second messengers in various pathways are true except:

- a. cAMP is found in smell and natural sugar pathways.
- b. Salty and sour tastes are mediated by amiloride-sensitive Na^+ channels, and umami taste uses a different pathway.
- c. IP3R1 and T2R1 are involved in taste signaling.
- d. Umami is mediated by a G-protein receptor, while T1R is involved in artificial sweetener and bitter taste signaling.
- e. IP3 is a second messenger in taste transduction.

Ans: b

8. One of the following statements is false:

Taste buds are in the lingual papillae only

