

# Yucky or yummy? How do amino acids taste to spider monkeys?

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## **Conclusion:**

The preference and aversion that the spider monkeys showed towards the different amino acids corresponds well with the description of sweet/ pleasant and un-sweet/ unpleasant given by humans to the same amino acids.

The taste sensitivity of the individual spider monkeys discriminate concentrations as low as 10-50 mM of Glycine and 10-40 mM of L-Proline from the solvent.

This suggests that spider monkeys are similar in their taste sensitivity for Glycine and L-Proline compared to humans and slightly more sensitive compared to mice.



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## The aim

To assess the taste responsiveness to the 20 L-amino acids and to determine taste sensitivity for Glycine and L-Proline.

## Background

Amino acids are the building blocks of proteins and some of them taste sweet/pleasant whereas others taste un-sweet/unpleasant taste for humans.

Spider monkeys may use taste of potential food to assess its palatability and nutritional value.

When animals encounter a food item with a bitter taste they usually reject it or only consume small amounts, since foods with bitter taste may be toxic or spoiled.

Food items that taste sweet to humans in contrast, are usually preferred by animals including nonhuman primates.



Picture 1. One of the bottles contain fresh water and the second bottle a given concentration of an amino acid dissolved in fresh water.

## Results

### Taste responsiveness to the 20 L-amino acid

The mean performance from four spider monkeys at the tested concentration of 200 mM.

- Three of the 20 L-amino acids were significantly preferred over water: L-Alanine, L-Proline and Glycine. Four other amino acids L-Cysteine, L-Isoleucine, L-Tyrosine and L-Valine were significantly rejected over water

The mean performance from four spider monkeys at the tested concentration of 100 mM.

- Seven of the 20 L-amino acids were significantly preferred over water: L-Alanine, L-Proline, Glycine, L-Aspartic acid, L-Glutamine, L-Lysine, and L-Serine and rejected one amino acid L-Tryptophan significantly rejected over water.

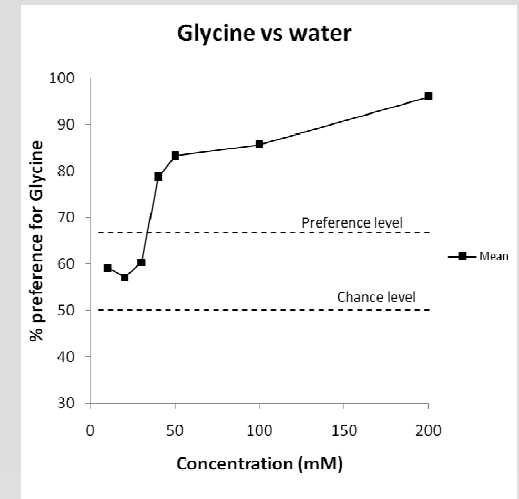
### Determination of taste preference thresholds

Mean performance from four spider monkeys when presented with various concentrations of Glycine (graph1).

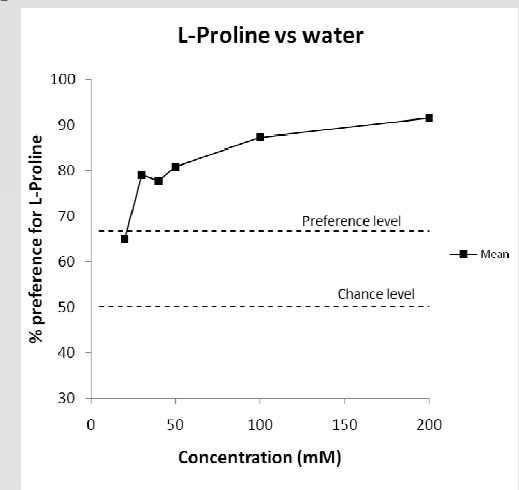
- At the group level the animals significantly preferred Glycine over fresh water with concentrations as low as 40 mM.

Mean performance from four spider monkeys when presented with various concentrations of L-Proline (graph 2).

- At the group level the animals significantly preferred L-Proline over water with concentrations as low as 20 mM.



Graph 1. The mean value of the taste responsiveness of four spider monkeys to various concentrations of Glycine tested against fresh water. Each data point represents the mean value of 10 test sessions of 1 min per animal.



Graph 2. The mean value of the taste responsiveness of four spider monkeys to various concentrations of L-Proline tested against fresh water. Each data point represents the mean value of 10 test sessions of 1 min per animal.