



Space Nutrition



Volume 2

What Count Dracula Needs

Issue #2



Food Facts

Iron is an important nutrient - not only for blood cells. Muscle cells require iron, as do a lot of other tissues in the body. Good sources of iron are meats, like beef, chicken, and pork, and green leafy vegetables, like broccoli, kale, and spinach.

Blood often comes to mind during the Halloween season. You might also think about blood when you get a cut or bruise, or have to go to the doctor. We know that blood is important because it helps carry oxygen to the cells of the body. Scientists see blood in an entirely different light. Collecting a blood sample presents a unique opportunity to see what was happening in the body at the moment the sample was taken. Depending on how you analyze the blood sample, you can find out how good (or bad) someone's diet is, or how their various organs (liver, kidney, muscle, bone) are working. By taking several blood samples, scientists can understand how the body works over time (for example, before, during, and after spaceflight).



Curiosity Corner



Andrew from TX asks -

Is anything special done to astronauts' food to keep it from spoiling?

Many of the space foods are dehydrated. Dehydration reduces spoilage by removing water for bacteria to grow in. Other foods are heated to very high temperatures. This kills any bacteria that may be present.

For missions like STS-107, astronauts are taught how to collect blood samples. The tubes they use to collect blood during spaceflight have a special material that helps separate the plasma from the blood cells when the sample is centrifuged. Once the two parts are separated, the tubes are frozen. After the flight, we remove the plasma and analyze it.

In our experiment on STS-107, crew members will drink a small amount of a special type of calcium. By seeing how much of this calcium appears in blood, we can find out how much calcium the crew members are absorbing from their diet.

Did you know?

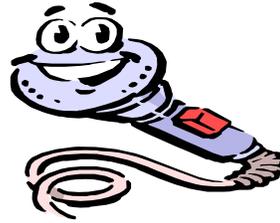
- Blood is made up of two parts: cells and liquid (called plasma). Usually 40% to 50% of blood is cells, and 50% to 60% is plasma.
- Once a blood sample is collected, it is centrifuged (spun) to separate it into these two parts. Many times only the plasma is analyzed.
- Anemia is a disease that occurs when you don't have enough red blood cells. This can be caused by many things, but one of the most common is not getting enough iron in your diet.
- Iron is very important for red blood cells. It is needed to transport oxygen from the lungs to other body tissues. People suffering from anemia are often tired, can't exercise well, and are very pale.



Word of the Month

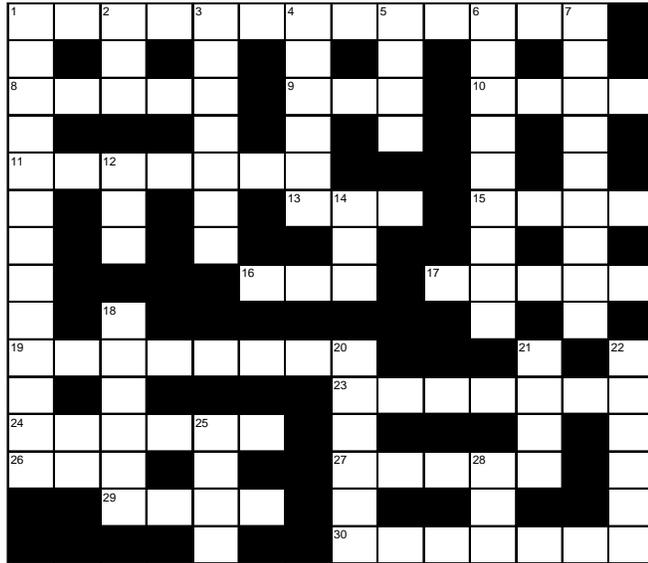
Questionnaire

Can you guess what this word means? Look for the meaning of the "Word of the Month" in the next issue of Space Nutrition



FUN CORNER

"Space and Other Trivia" Crossword



Across

- 1 _____ Space Station
- 8 Seen from the Shuttle windows
- 9 Contingency Water Container
- 10 External fuel _____
- 11 3 crew members call the space ____ home
- 13 Apollo-____, the 2nd Apollo mission to orbit the moon
- 15 The principal investigator is the lead of the research _____
- 16 Near or _____
- 17 Hale-Bopp
- 19 Astronauts spend several months in _____ before they fly on a space mission
- 23 The primary _____ site is at KSC
- 24 Sean _____, NASA administrator
- 26 Acronym for "no earlier than"
- 27 The flu is a _____ illness
- 29 _____ Gagarin, first person to orbit Earth
- 30 Space vehicle

Down

- 1 A detailed examination
- 2 Tether
- 3 Space station foods are American and _____
- 4 Going up
- 5 Unit of measure
- 6 Study of nutrients
- 7 Interpreters understand foreign _____
- 12 _____ a question
- 14 _____, nose, and throat
- 18 The space shuttles were grounded because of _____ concerns
- 20 _____ protect the astronauts' hands
- 21 Acronym for Digital Image Animation Library
- 22 To light a fire
- 25 _____ is to flame, as day is to sun
- 28 Short for altitude

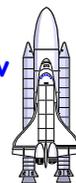
Check out these cool NASA links for more fun space science facts:

<http://virtualastronaut.jsc.nasa.gov>

<http://lsda.jsc.nasa.gov>

<http://www.nasa.gov/kids.html>

<http://www.spaceflight.nasa.gov>



Check out the Nutritional Biochemistry Laboratory's website for more information about nutrition and space.

www.jsc.nasa.gov/sa/sd/facility/nutrition.htm