

What do astronauts eat in space? Can they grow food?

What are some of the things that astronauts eat while they are in space?

Even though when you go to some shops you can buy "Astronaut Ice Cream," this is not the kind of food that astronauts eat when they are travelling. Packaging technology has advanced so astronauts can eat very similar meals to what we have on earth without having to chase floating blobs of juice or spinning bananas around. Astronauts even eat with a fork, knife and spoon, except since everything they eat comes in sealed packages, their silverware also includes a little pair of scissors to cut open the packet that contains their meal. The meal itself consists of foods that are specially treated to preserve them and prevent bacteria and other microbes from growing on them. Some foods, like granola bars and nuts, don't need any treatment. Others are dehydrated, like macaroni and cheese and eggs, and the astronauts add water to them in space to soften them back up. Fruits, yogurts and some meats are treated with heat to kill bacteria, and some are partially dehydrated and eaten that way on the shuttle, like dried apricots and peaches. Steak and some other meats are treated with radiation to kill microbes. Also, astronauts have to keep in mind that "eating healthy" is a little different in space. For example, since they are in a zero-gravity environment, their bones become weaker, so they make sure to eat a calcium-rich diet and take vitamins. Even more interesting is the fact that some foods actually are dangerous in space, such as bread and other foods that make crumbs. An astronaut could get sick from inhaling bread crumbs that are floating around the cabin, or they could get in the way of a nearby scientific experiment. Hot food is also dangerous because if it floats away and touches an astronaut, it could burn him or her. If you want more detailed information on how astronauts eat in space, check out NASA's [Space Food](#) website, or [Space Food and Nutrition](#).

Can you grow food in space?

We are not yet very good at it, but we can grow some plants in space. Most plants do not grow very well in microgravity, and circulating nutrient solutions through their roots (without getting any clogs in the pumps) and providing light for them to grow (without creating unnecessary heat or wasting power) is a big challenge.

Learning to grow enough vegetables to be a useful source of food for astronauts is important if astronauts want to go to Mars!

Can astronauts produce water in space?

Water can be created by burning hydrogen or by burning hydrocarbons like gasoline, but we don't really create water to drink that way. Even on Earth, we just move around the water that's here!

The same thing happens on a space mission, except that there isn't any rain or rivers or lakes. Astronauts must bring along the water that they need.

To avoid having to bring so much, astronauts would like to be able to purify and recycle their waste water. One way to do that is to use the water to grow plants, so you can see how many of the goals of long-term spaceflight are inter-connected.

Astronauts on the International Space Station will wash with water collected from the air itself. This is water that has been exhaled in the astronauts' breath, and sweat that has evaporated off their bodies. That sounds kind of gross, but because the water is collected in vapor form, it's actually pretty clean--like rainwater! Other wastewater will be purified by filters for drinking and other uses.

Water is very heavy, which makes it expensive to launch it into space. Each drop that can be reused in orbit is important!

Imagine going camping for over a week with several of your close friends. You would make sure you have plenty of food and the gear to cook and eat it with. The food would have to be stored properly and nonperishable to avoid spoilage. After finishing your meal, or at the end of your camping trip, you would then stow all your gear and dispose of your trash properly just before the ride home.

Astronauts basically do the same thing when they go to space. Preparation varies with the food type. Some foods can be eaten in their natural form, such as brownies and fruit. Other foods require adding water, such as macaroni and cheese or spaghetti. Of course, an oven is provided in the space shuttle and the space station to heat foods to the proper temperature. There are no refrigerators in space, so space food must be stored and prepared properly to avoid spoilage, especially on longer missions.



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Condiments are provided such as ketchup, mustard and mayonnaise. Salt and pepper are available but only in a liquid form. This is because astronauts can't sprinkle salt and pepper on their food in space. The salt and pepper would simply float away. There is a danger they could clog air vents, contaminate equipment or get stuck in an astronaut's eyes, mouth or nose.

Astronauts eat three meals a day - breakfast, lunch and dinner. Nutritionists ensure the food they eat provides them with a balanced supply of vitamins and minerals. Calorie requirements differ for astronauts. For instance, a small woman would require only about 1,900 calories a day, while a large man would require about 3,200 calories. There are also many types of foods an astronaut can choose from such as fruits, nuts, peanut butter, chicken, beef, seafood, candy, brownies, etc... Drinks range from coffee, tea, orange juice, fruit punches and lemonade.



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As on Earth, space food comes in packages that must be disposed. Astronauts must throw their packages away in a trash compactor inside the space shuttle when they are done eating. Some packaging actually prevents food from flying away. The food packaging is designed to be flexible, easier to use, as well as maximize space when stowing or disposing food containers.