

Are we omnivores, herbivores or carnivores?

Are we omnivores, carnivores or herbivores? It's important for animals to eat what they are physiologically and anatomically designed to eat, to improve the chances of survival and health. So, what are humans designed to eat? Dr. Sofia Pineda Ochoa discusses this often misunderstood topic.

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Video Transcript:

Hi this is Dr. Sofia Pineda Ochoa with Meat Your Future.

Are humans herbivores, carnivores or omnivores? It's very important for a given animal to eat what they are physiologically and anatomically designed to eat, to improve the chances of survival and health. So, what are humans designed to eat?

When looking at a species to determine what they are in terms of carnivore, omnivore or herbivore, we can look at their behavior or we can look at their biology. From a behavioral standpoint, humans behave as omnivores because we observe many humans in their behavior eating a wide variety of both animal and plant-based foods. Biologically, however, from a physiologic and anatomic standpoint, it's a different story.

Dr. Williams C. Roberts from the National Institutes of Health and Baylor University – who is the editor-in-chief of the American Journal of Cardiology and one of the most prominent cardiologists in the world with over 1,500 publications in peer reviewed medical journals – summarized our answer very nicely. He wrote:

“Although most of us conduct our lives as omnivores, in that we eat flesh as well as vegetables and fruits, human beings have characteristics of herbivores, not carnivores. The appendages of carnivores are claws; those of herbivores are hands or hooves. The teeth of carnivores are sharp; those of herbivores are mainly flat (for grinding). The intestinal tract of carnivores is short (3 times body length); that of herbivores, long (12 times body length). Body cooling of carnivores is done by panting; herbivores, by sweating. Carnivores drink fluids by lapping; herbivores, by sipping. Carnivores produce their own vitamin C, whereas herbivores obtain it from their diet. Thus, humans have characteristics of herbivores, not carnivores.”

That's right. Humans have characteristics of herbivores, not carnivores or omnivores – because omnivores, like bears and raccoons, actually retain most of the carnivorous characteristics, so that they are still able to digest and hunt their prey, and do so effectively.

Although we behave like omnivores, our digestive system actually resembles that of the chimpanzees and other great apes, who eat mostly plants. The percentage of animal foods

that chimpanzees do eat is very low, if any, about 2 to 3% and mainly termites and other insects.

Regarding the gastrointestinal system – humans, like herbivores, have a relatively smaller opening of the oral cavity compared to the head size. Carnivores have a wide mouth in relation to the head size, and their jaw joint is a hinge joint, very strong and stable, lying in the same plane as the teeth; the lower jaw of a carnivore doesn't move forward, and there is very limited side-to-side motion. Like herbivores, our jaw joint is positioned above the level of the teeth, and because it has an expanded angle, the lower jaw has more sideways motion, and more lateral and complex motion for chewing plant foods. Our jaw joints are less stable and strong than those of carnivores therefore, and could be easily dislocated if we actually tried to prey on an animal. On the other hand, if a carnivore had our more unstable jaw, and dislocated their jaw, they would probably starve and die, or be preyed upon; so, it would be very disadvantageous to a carnivore to have jaws like ours.

Herbivores chew food to disrupt plant cell walls for better digestion and to mix it with saliva, because unlike carnivores who mostly swallow the food without chewing and mixing it with saliva, herbivores and humans have saliva that contains digestive enzymes. So, our digestion starts in the chewing process. The saliva of carnivorous animals does not contain any enzymes for digestion.

Teeth are strikingly different as well. Our canines are flattened, blunt and small, shaped like a spade and non-serrated; unlike carnivores, who have them elongated and dagger-like, which are often serrated for killing and tearing their prey. Our molars and premolars are squared and flattened, for grinding and crushing; unlike carnivores, who have them sharp, jagged and shaped like a blade.

If we humans tried to kill a giraffe with our teeth, we'd

sooner get kicked by the animal. Or, if we successfully snuck-up and actually tried to really bite into the live animal, it could easily result in some of our teeth falling out or our jaw dislocating. We would for sure end up with a very annoyed giraffe, but not a dead one to prey upon.

And on to the stomach. Our stomach volume is, like herbivores, about 25% of our gastrointestinal tract; unlike carnivores, who have a very large stomach volume with twice as much capacity, about 60-70% of their total G.I. tract volume, which allows them to kill maybe once a week, gorge on large amounts of meat, and digest later.

The pH of our stomach is about 4 to 5 with food, unlike carnivores who secrete a lot more hydrochloric acid and have a stomach pH that is a lot more acidic (their pH is usually one or less with food). The more acidic stomach of a carnivore is advantageous to kill bacteria found in decaying flesh.

As Dr. Roberts mentioned, humans, like herbivores, have a very long small intestine, about 10 times the length of our body; unlike the intestines in carnivorous animals, which are short, only about 3 to 5 times their body length. The long intestines in humans and herbivores is necessary for the fibers in plants, which require longer and more elaborate guts, sometimes even sacculated like the human gut.

Also there are some striking physiologic differences as well.

Just like other herbivores, humans require vitamin C from plants. If we don't eat vitamin C, we get a disease called scurvy where we are unable to make collagen, which is the building substance of mostly everything in our body (so, the lack of vitamin C can result in problems in our bones, bleeding gums, problems with healing, etc.). And vitamin C is found exclusively in plants. Mammals that are primarily carnivorous do not need to eat vitamin C from their diets. They make their own vitamin C.

Also, vitamin A is telling. There are two types of vitamin A: (1) Preformed vitamin A, like retinol, found in animal products like meat, liver, dairy products, eggs and fish; and (2) pro-vitamin A, carotenoids, found in plant foods. The form of vitamin A that comes from animals can be toxic to humans in large quantities. The livers of animals that are primarily carnivorous have the capacity to detoxify vitamin A. However, our livers are unable to do this.

In this paper published in the American Journal of Clinical Nutrition, scientists expressed concern that excess of the Vitamin A that comes from animals is not always identified and can cause serious problems. They say, "excessive vitamin A intake may be a growing but under-appreciated problem." And apparently this problem is nothing new. The scientists reported that:

"Fossilized skeletal remains of early humans suggest that bone abnormalities may have been caused by hypervitaminosis A [which means excess of vitamin A]. From these and other reports, vitamin A toxicity is known to be an ancient phenomenon."

So, it looks like we have been behavioral omnivores for quite some time now, notwithstanding our biology.

The last thing I want to point out is actually a very sad thing. A characteristic that is unique to herbivores and not in carnivores, and it's a problem in humans. It's something that Dr. Roberts pointed out as well:

"Atherosclerosis affects only herbivores. Dogs, cats, tigers, and lions can be saturated with fat and cholesterol, and atherosclerotic plaques do not develop."

That's right. Carnivores and omnivores – animals who are designed to eat other animals – can eat all the animals and animal products they want and they never develop

atherosclerosis, which are plaques of cholesterol coating our vessels that can occlude the blood flow that goes to our heart and brain [and] cause heart attacks and strokes.

Cholesterol in our diet is only present in animal products, and we don't need to consume any of it because our body synthesizes already all of the cholesterol that we need for all of our biologic needs. Animals that are not designed to eat meat, like herbivores including humans, do develop atherosclerosis. We do develop this problematic coating of cholesterol in our arteries, and we do it big time. Atherosclerosis is ubiquitous on a Western diet with animal products since very early in our lives.

We really do end up paying a price for behaving like omnivores, when we are biologically designed as herbivores. Thank you very much.

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