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A Panda’s Tale: Eat Like a Vegetarian, Thrive Like a Carnivore

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Courtes of Fuwen Wei

Who doesn’t love a panda? The cute eye markings of raccoons combined with the cuddliness of a baby bear. Scientists initially classified them as bears, but in the last mid-century, the question was raised as to whether they were more likely to be in the raccoon family. After all, they neither eat meat or hibernate, two qualities we associate with bears; and their skull, dentition, and jaw musculature are more adapted to fibrous, plant diets, like a raccoon.

A genetic study comparing a range of bears, raccoons, as well as both a giant and lesser panda concluded, that genetically the giant panda is closer to the bear; the lesser panda seems closer to the raccoons. Having shared a common ancestor, the lesser panda and their raccoon brethren split off from the bears long ago, and shortly after that, the giant panda left their bear brethren behind evolving in their own ways. A new study looks at giant panda’s through the lens of their metabolism, and even though they eat like a vegetarian, they utilize the nutrients like a carnivorous relative.

The researchers followed the eating habits of wild giant pandas whose diet is solely bamboo. They spend eight months of the year eating bamboo in the lowlands, feasting on leaves and when available shoots; then migrating to the highlands where they continue eating the shoots and leaves of other bamboos species. It seems that the migratory pattern reflected not merely the availability of food, but the macronutrients within, specifically protein. A closer look revealed that the switch from shoots to leaves and lowland to highland reflected choosing the most significant source of protein – when shoots were young, they had the greatest protein, as they aged, leaves had more; and when the growth cycle was complete, switching to the other environment allowed them to eat newly appearing shoots, restarting the cycle.

The researchers attempted to calculate the amounts of energy derived from protein, carbohydrate, and fat, and found, that more than 60% of energy comes from protein, consistent with the meat-based diet of “hypercarnivores” like wolves or perhaps the panda’s bear ancestors. And because the panda has a short intestine with rapid transit time, little of the bamboo’s fiber was converted into carbohydrate energy. When the macronutrient composition of panda milk was determined, it too had a profile more similar to carnivore’s than herbivores; so it seems that the choices of energy sources, in this case, protein, was throughout the panda’s life cycle.

The main point to be made is that classification of our diet based on foods is not necessarily the same as when classified by nutrients. The giant panda eats only bamboo, but its metabonomic [1] pattern is that of a carnivore. Is it possible that many of our food studies fail to make the same distinction, that it is not so much what we eat, but how and in what proportion it is processed into energy and building blocks, that alters our health and wellbeing? Epidemiologies based on a diet often focus on one component of our intake, not the entirety; they also focus on what we are putting into our mouths, not what is being absorbed and used. The giant panda demonstrates that we might be wrong in looking at what we eat in such an isolated way.

[1] Metabonomics is the measure of metabolites and their chemical intermediaries as a dynamic system responding to genetic modification, physiology and external, e.g., environmental stimuli.

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