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Natural Healers: The Four Pillars of Medicine and How Animals Use Them

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Is meat-eating the reason pet-owners get sicker than their dogs?

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Ben Hart may be the smartest guy I know. He's a professor emeritus at UC-Davis, and I get to pick his brains over red wine (him) and beer (me) when we meet at scientific conferences. Four or five years ago we were in a back room of a Barcelona tapas bar talking about herbal medicine. Ben was excited about a new idea he had. Modern treatments for acute illnesses, he told me, boil down to a handful of "pillars of medicine." But the interesting twist was that these pillars have also evolved in other species. His enthusiasm for his new theory was infectious, and I caught the bug.

The problem was that he swore me to secrecy. He told me not discuss his idea with anyone. He was not ready to go public. Until now.....

The Veil of Secrecy is Lifted

I can finally write about Ben's ideas because he recently published them in the prestigious Transactions of the Royal Society. The pillars of medicine he describes are Quarantine, Medication, Immunization, and Nursing Care. Animals use them via five health-related strategies.

Strategy 1. Avoid germs and remove parasites

This strategy includes a behavior that all pet owners are familiar with - grooming. House cats can reduce their flea load by 50% simply by cleaning and licking their fur. More impressively, Ben discovered that licking enables impalas in Africa to eliminate nearly 90% of the ticks on their bodies. Animals also use licking to cleanse wounds. Saliva, it seems, is a potent anti-microbial agent.

Some animals lick their genitals to prevent STDs.

Animals even use saliva to combat sexually transmitted diseases. Some species lick their genitals after having sex, and this post-coital penis licking kills bacteria. Ben thinks that genital licking evolved to protect sexual partners from STDs. (I will resist the obvious joke.)

Another way to avoid parasites is obey the rule "Steer clear of feces." Many animals accomplish this by not defecating near their sleeping quarters. This is not, however, an option for helpless

newborns who cannot leave their dens. The solution is simple: parents eat their off-springs' poop. Cats and dogs do this all the time. Ben argues that feces-eating parents don't get sick because they consume their youngster's excrement when it is fresh, before the parasite eggs have a chance to hatch and morph into infectious larva.

Strategy 2. Quarantine

Many animals defend territories against members of the same species. Typically, biologists study territorial behavior in the context of mating and protection of food resources. But Ben argues that territoriality also has a medical function - it keeps potentially disease-ridden strangers at a distance. For animals like rodents, sick infants can be a reservoir of germs, endangering the rest of the litter. A strategy these mothers use to keep germs from spreading from sick to healthy offspring is to simply eat the sick ones. (I'm glad I am not a gerbil.)

Strategy 3. Herbal medications

Animals also use herbal medicine to stave off illnesses. Nearly every cat and dog owner has seen their pets eat grass. The reason is not, as you may have heard, because the dog or cat feels sick and needs to induce vomiting. Rather, the roughage in grass flushes internal parasites and worms from their digestive system. Our pets don't know they are worm-free; they are just doing what comes naturally. Animals also use plants as biological insecticides. The California dusky-footed wood rat, for example, brings bay leaves into their nests to repel fleas.

The degree that sick animals intentionally use plants for self-medication is unclear. Many plants have anti-microbial properties and some contain anti-inflammatory substances. Ben, however, suggests that the use of these natural drugs by wild animals is infrequent. Perhaps the best evidence comes from chimpanzees that eat the extremely bitter pith of a plant stalk (Vernonia) when they are sick.

Strategy 4. Immunization

Vaccines have only been around since the late 18th century. So how did our ancestors and animals immunize themselves or their offspring against diseases? The answer is selective exposure to small amount of germs which facilitates the development of natural immunities. Mothers in some early maturing species of primates will pass their young around to each other. This presumably fine-tunes their babies' immune systems by exposing them to low levels of pathogens carried by members of their species. Ben also suggests that young carnivores benefit from the fact that their mothers drag food for their babies over filthy den floors during weaning. This exposes them to early on to germs and helps the babies develop natural immunities. (He is, of course, not saying that this is a conscious decision on mom's part.)

Strategy 5. TLC and nursing care.

Tending to ailing brethren occurs in the animal kingdom. For example, biologists observed a troop of dwarf mongooses feed, groom, and stay near a group member that had been seriously injured by a snake. Likewise, the members of a pride of lions took care of a wounded lioness by feeding her for nine months. The 2003 case of African elephants that came to the aid of an

injured comrade is particularly compelling. One elephant, Grace, tried, unsuccessfully, to revive Eleanor, the group's matriarch. When Eleanor died the next day, members of the group hovered near her body, tenderly touching her corpse with their trunks. Elephants continued to visit Eleanor's body for the next five days.

Humans Get Sick More Often than Other Animals

So there are clear parallels between animal medicine and human medicine. But the human medical arsenal is vastly greater than the disease fighting behaviors of other species. An obvious explanation is that we are more intelligent than other species. (I freely admit, however, that I am not as smart as my new phone.)

But here is the interesting part: Ben claims that humans have more medicine because we need more medicine. The reason is that we get sick more often. Ben is investigating this hypothesis in several ways. For example, in a survey of over 2,500 dog owners, it looks like the owners are twice as likely as their pets to get sick over the course of a year.

Is Meat the Culprit?

Why should people be more prone to acute illnesses than animals? Ben thinks the reason is meat. He believes many human health problems are attributable to our shift away from a primarily plant-based diet toward fleshier fare, a culinary move that began about two million years ago. Ben admits some of these ideas are conjectures that may turn out to be wrong. But as he told me in an e-mail recently, "I love introducing new concepts. I'm not worried if they get shot down."

That's the way good scientists think.

Ben and I will catch up this summer in Cambridge at the meeting of the International Society of Anthrozoology. I'm anxious to hear what's on his mind these days.

Ben, the drinks are on me.