



It's Not Ice in Their Veins, Just Antifreeze!

On a warm day in January ("warm" is relative here), it is not uncommon to see small insects flying about. There are even some small moths that come to our windows at night, seeking to get inside our lighted house. How do these survive the colder, freezing temperatures of winter? It turns out that insects have sort of an antifreeze in their blood. If it were not for this chemical substance, the blood and body tissue would freeze and ice crystals would penetrate the cells, causing the insect to die. It would be like untreated frostbite in humans, where tissues die from the cold and, you know, amputations are sometimes necessary! But insects do survive due to this substance in their blood. Of course, their blood isn't like ours with iron being the chemical that carries the oxygen to our cells. Insect blood is based on copper compounds, and the fluid is green instead of red as in our bodies. Many insects hibernate under rocks, wood, leaves and such during the winter. Their metabolisms slow down and they are almost lifeless. Bring them indoors and they will "thaw out" and begin movement again. Their blood has protected them from being destroyed by the freezing temperatures.

Some insects pass the winter in a cocoon or other type of resting state. As kids in Minnesota, we would hike through the snow and search for cocoons of moths that had been spun up on the branches of bushes and trees. Sometimes the temperatures would drop to 35 degrees below zero during winter. I'd say the antifreeze in these moths was pretty well concentrated! As humans, we always had to check the antifreeze in our cars to make sure the engine was safe for the winter. I wonder if the caterpillars had to check theirs before spinning the cocoons???

As with all the mysteries of nature, we don't have all of the answers. While these creatures must brave the cold, we get to stay indoors with our warm fires and some of us even put a little "antifreeze" in our toddies as we gaze at the fire and dream about the upcoming gardening season!

