

Preserving Insects in Hand Sanitizer

Aquatic insects are typically stored in glass vials filled with alcohol, which unfortunately means the insects all sink to the bottom. It's then really hard to position them so that you can see particular features. If you want a good look at the insect, you usually have to take it out of the vial and put it in a dish of alcohol. This all makes insects in vials hard to use in outreach activities. However, the website where I learned this technique featured photos of insects suspended in the *middle* of vials. No sinking to the bottom, no turning the vial over and over and over trying to get the insect flipped over just right to get a close look at a particular piece. They're supposed to be durable too. I decided I had to try it - and it totally worked!

I love this method, so I wanted to share it here. While it is probably not a great way to preserve insects for research (I'm sure there are things in hand sanitizer that are not so great for, say, genetic analyses), it is perfect for display specimens. I think this is going to work especially well with kids, those cute little destroyer of specimens in vials. :)



Things You'll Need:

- clear hand sanitizer
- vials (clean - can be ordered online in a variety of styles, search for "glass screwtop vial" or visit [Bioquip](#))
- insects - dry or preserved in alcohol (fresh supposedly don't work well)
- forceps or toothpick/wooden skewer
- eyedropper or pipet with bulb
- small saucepan
- stove or hot plate

Instructions:

You've gathered your gear, so let's get started! First, pour or pump hand sanitizer into the vial, filling about 2/3 full:



I overfilled mine when I was taking the photos - you definitely want to leave more space at the top! Next, put a bug in the vial and press into the hand sanitizer using forceps or a toothpick:



Don't worry too much about the exact position at the moment. Just get them into the gel. Notice how many air bubbles are in the vial with the bugs:



That defeats the purpose of creating gorgeous display bugs! The original tutorial spoke of a few different ways to get the bubbles out, but I followed their preferred method and boiled my vials. This has the dual purpose of getting the air bubbles out of the gel surrounding the bug and removing the air bubbles from inside the bug if you are using dry specimens. Fill a saucepan with about 1 inch of water (water should come about halfway up the side of the vials) and place the open vials upright on the bottom of the pan:



Carefully bring the water to a gentle simmer, taking care not to let the vials fall over. Simmer for 10-15 minutes or until most of the bubbles are gone. NOTE: Be very careful that no hand sanitizer comes into contact with the burner or any open flames or it will burst into flames! ANOTHER NOTE: Unless you want little glass-shard-and-alcohol-gel bombs simmering on your stove, be sure to leave the lids off. The gel inside the vial will boil, so this is where overfilling the vials like I did becomes a problem. It's not the end of the world if they boil over, but it does give you extra work later. After the bubbles are gone (there may be some large bubbles coming up from the bottom - don't worry about those too much for now), carefully remove the vials from the water. Your vials should look like this:



No bubbles! Now position your insects in the gel as you would like for them to be displayed:



You can be as picky as you want during this stage! The insects will become soft as they boil in the hand sanitizer, so you can position legs and antennae and other parts relatively easily at this stage, even if you used dry insects. I didn't care so much about the exact position of the body parts, so I just put them in the center of the vials where they were easy to look at. If there are any remaining bubbles, remove them with an eye dropper or pipet with a bulb:



Next, you need to fill up the rest of the vial. Leaving air at the top of the vial will eventually result in air bubbles working their way into the gel. I also learned through trial and error that putting cold hand sanitizer on top of hot sanitizer results in a WHOLE lot of bubbles! Let the vials cool to about room temperature, then add more hand sanitizer:



To avoid getting bubbles later, you don't want to leave any headspace above the gel. Fill your vials a little overfull so that some hand sanitizer will squish out when you put the lid on:



If there are bubbles in the gel after you top off the vials, remove them with the pipet or eye dropper as described above. Then, screw on the lids!



Wipe the excess hand sanitizer off the glass around the lid. Then, if your vials boiled over like some of mine did, run them under some hot water for a few seconds and wipe the vials with a soft cloth until all of the gel remnants are gone and the glass is clear.

Voila! You now have some spiffy insects suspended in the center of a vial, perfect for displaying, taking to outreach events, showing to your colleagues, letting little kids look at, giving as gifts to your entomologist friends, etc. The insects will remain in place, regardless of how you hold the vials:



Because you can suspend things inside the gel, you can do some fun things with your vials. Maybe try layering several morphs of the same species in one vial. I'm thinking of creating some life cycles vials that will demonstrate how my water bugs develop from an egg into adults. You could layer a whole bunch of insects in one really big container and use it as a home decor item. Okay, okay. I'm probably the only person in the world who would ever do that, but I would love it! Still, there are lots of possibilities. Play around and have fun!

Please note that unless you are able to permanently seal your vials, you will probably need to top off your vials now and again as some of it will eventually evaporate. Follow the instructions for topping off above and reseal the vial.

This method of insect preservation was originally made available as an online tutorial by Dejen Mengis et al. Please visit the following website for the original tutorial and additional photos of completed vials: <http://www.slideshare.net/sdroege/how-preserve-insect-specimens-in-hand-sanitizer>