

# Freeze Drying At Home

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You probably don't have a good vacuum chamber at home, but you almost certainly have a refrigerator. If you don't mind waiting a week you can experiment with freeze drying at home using your freezer.

For this experiment you will need a tray, preferably one that is perforated. If you have something like a cake-cooling rack or a metal mesh tray that is perfect. You can use a cookie sheet or a plate if that is all that you have, but the experiment will take longer.

Now you will need something to freeze dry. Three good candidates are apples, potatoes and carrots (Apples have the advantage that they taste OK in their freeze-dried state). With a knife, cut your apple, potato and/or carrot as thin as you can (try all three if you have them...). Paper thin if you can do it. The thinner you cut, the less time the experiment will take. Then arrange your slices on your rack or tray and put them in the freezer. You want to do this fairly quickly, or your potato and/or apple slices will discolor.

In half an hour look in on your experiment. The slices should be frozen solid.

Over the next week look in on your slices. What will happen is that the water in the slices will sublime away. That is the water in the slices will convert straight from solid water to water vapor, never going through the liquid state (this is the same thing that mothballs do, going straight from a solid to a gaseous state - mothballs are the only thing in a normal person's life that sublime naturally). After a week or so (depending on how cold your freezer is and how thick the slices are) your slices will be completely dry. To test apple or potato slices for complete drying, take one slice out and let it thaw. It will turn black almost immediately if it is not completely dry.

When all of the slices are completely dry, what you have is freeze-dried apples, potatoes and carrots. You can "reconstitute" them by putting the slices in a cup or bowl and adding a little boiling water (or add cold water and microwave.) Apples you can eat in their dried state, or you can reconstitute. What you will notice is that the reconstituted vegetables look and taste pretty much like the original! That is why freeze drying is a popular preservation technique.