

Could plant medicines affect how well Tamiflu works?*

This study looks at whether healing plants might interfere with a flu medicine called oseltamivir. Oseltamivir is usually sold under the brand name Tamiflu. It is used to prevent and treat flu, and health departments may be using it this Fall as they try to keep the H1N1 (swine) flu virus from spreading.

About how Oseltamivir works

Before oseltamivir can work, our bodies first have to change it in various ways. We can think of this as being a bit like making a poultice from the bark of a tree. To make a poultice with healing effect, a human might first have to remove the outer bark, then boil up the inner bark and pound it. In a similar way, our bodies throw away some parts of the oseltamivir, and turn the rest into something called “oseltamivir carboxylate.” This is the active ingredient that helps prevent and treat flu.

A poultice would then have to be placed where it is most useful—on the wound. In the same way, to fight flu, our bodies then have to move the active ingredient out of our stomachs to where it is useful—into our cells (the other parts of our body).

We know that oseltamivir works better for some people than others, and that it works better in adults than in young children. We also know that some drugs and foods interfere with oseltamivir. For instance, aspirin reduces its effect. And a recent study showed that milk and cheese also interfere with it. This made us

* This is a plain-language version of a paper by Brian Foster, Rui Liu, Teresa Tam, Jingqin Mao, Ammar Saleem, Anthony Krantis, and John Arnason titled “The Effect of Natural Health Products on the Activity of Human Hepatic Microsomal-Mediated Metabolism of Oseltamivir.”

wonder if some natural health products might interfere with the drug. To find out, we did lab tests on

- Cold-FX (a medicine made from ginseng)
- Echinacea (in capsules)
- Three herbs that Chinese people traditionally use for respiratory problems:
 - Chrysanthemum flower
 - Du Huo (Isatis root)
 - Chai Hu
- Goldenseal
- 17 of the Cree healing plants

The main point of these tests was to see if the plants cause cells to make less of the “active” ingredient from oseltamivir. We also tested a few of the plants to see if they might affect the way our bodies transport the active ingredient from our stomachs into other parts of our bodies.

Do the natural products affect how much “active ingredient” gets made from oseltamivir?

Do some herbal medicines affect how well our bodies change oseltamivir into its active ingredient? In our tests, we found that

- Cold-FX did not affect how oseltamivir works
- Echinacea had different effects depending on whether we dissolved it in ethanol or in water. The ethanol tea did not interfere with oseltamivir. But the echinacea dissolved in water interfered a bit. This is a warning sign, because we were testing just a little bit of the plant. If even a little bit has an effect, taking a lot might have a serious effect on how oseltamivir works.
- The first two Chinese herbs did not affect oseltamivir, but the Chai Hu had some effect. As with the echinacea, this tells us that we should be concerned about how larger doses of Chai Hu could affect oseltamivir.

- Goldenseal had a really large effect. When we added goldenseal to the mix with oseltamivir, we got only a quarter as much of the active ingredient as before.

Do the Cree healing plants affect how much active ingredient gets made from oseltamivir?

We also tested 17 of the Cree plants to see if they affect how much active ingredient gets made from oseltamivir. We did this using plant teas made with ethanol.* Our tests found that 12 of the plants did reduce oseltamivir's effects:

- 3 plants (Labrador tea, marsh Labrador tea, and juniper berries) reduced how much active ingredient got made by 40–55%
- 3 plants reduced the active ingredient by 20–40%
- 6 plants reduced it by about 10%

Then we redid the tests for the three plants that had the most effect, but dissolving the plants in water instead of in ethanol. Prepared this way, the plants did *not* affect how oseltamivir works.

Do plant medicines affect how oseltamivir gets moved into the cells?

Recall that our bodies handle oseltamivir in two steps. First, they change it into active ingredient. Then they transport this active ingredient into our cells (the different parts of our body). We wanted to know if some of the natural medicines might interfere with this second “transport” step. We tested three medicines: Labrador tea, echinacea, and Cold-FX. Of these, only the Cold-FX had a small effect.

* Why did we use ethanol, instead of testing teas made as the elders make them? First, the plant samples had already been made by another lab. They came to us in ethanol. Also, we don't know much about how the elders prepare the plants. So we can't really test teas that are like the ones the elders make.

Conclusions

Our results suggest that some natural products and Cree healing plants could reduce the effect of oseltamivir (Tamiflu). Just how much effect the plants have in real life will probably depend on how often people take the plant medicines, and how much they take. But until we know for sure, people who are taking Tamiflu should probably use only small amounts of these plant medicines.