Essiac Liquid Extract, Powder or Capsules: Which is Best?

The original Essiac formula is available in several formats. Some formulations use or contain alcohol, some don't. Some are herbal liquid extracts, other ones are dried and packed into capsules. What's the difference? Which product should you take? This article explains the basics of herbal extraction and the possible differences in active compounds and benefits you can expect from each available Essiac formulation.

Disclaimer: This article is for informational purposes only. Please discuss your health concerns with your doctor. The FDA has not approved Essiac for treating cancer or any other medical condition. Essiac is sold as a herbal dietary supplement.

Types of Essiac Extracts

Available products

The following products are available through Essiac Canada:

- ***Essiac herbal powder***: contains the dried herbs that should be dissolved in water (alcohol isn't used at all)
- ***Essiac liquid herbal extract****:* contains the alcoholic extract in liquid form (the final product is *not* alcohol-free)
- ***Essiac herbal capsules***: contains the dried alcoholic extract (the final product is alcohol-free)
- ***Essiac daily drops***: contains the alcoholic extract in which the alcohol is replaced with glycerin (the final product is alcohol-free)
- ***Essiac Gold capsules***: contains the dried alcoholic extract of the four herbs (the final product is alcohol-free), plus AHCC

To understand the potential benefits of Essiac and its constituent herbs, read this article first.

Understanding water vs. alcohol extraction in plant science

First, let's clarify some basic terminology:

- ***Water/aqueous extract***: refers to using distilled water, either hot or cold, to make herbal extracts

- ***Alcoholic/hydroalcoholic extract***: refers to using anywhere from 20 to 90 percent ethanol dissolved in distilled water to make herbal extracts

You may wonder: why use one solvent over the other? What's the point, if the final product is made from the same plants and their ratios? The reason is that **different solvents can extract different active compounds, which can change the health benefits and uses of the final product.**

Essiac Water Extract

Water: good for extracting complex carbohydrates

In general, water will do a good job of extracting active compounds that are highly soluble in it. In chemistry, these compounds are labeled as *polar*. Some examples include (Petkova, 2021; Wang et al., 2019):

- **Fiber,** inulin-type fructans, and pectic and other polysaccharides from burdock root with immune-balancing, anti-inflammatory, prebiotic, and anti-constipation benefits
- **Other complex polysaccharides** like mucilage from burdock root and slippery elm bark that soothes irritated tissues and protects the gastrointestinal lining
- **Some flavonoids** (in their sugar-bound glycoside form) from all constituent herbs with antioxidant action
- **Tannins** from sheep sorrel, slippery elm bark, and rhubarb root with anti-inflammatory and anti-diarrheal effects
- **Water-soluble vitamins** like vitamin C in sheep sorrel leaves
- **Proteins and minerals**

Many traditional herbal preparations use water as it's the simplest, healthiest, and most abundant solvent.

Studies of the whole extract

A study testing anti-leukemic activity in mice used a water extract prepared from the four constituent herbs. The extract decreased abnormal leukemia blood cells, improved weight gain, and helped restore blood count when given to the animals as a drink (Kabeel et al., 2018).

The authors used a process similar to the manufacturer's instructions to prepare the water extract (as described in an earlier study) (Leonard et al., 2006).

However, the herbs used in the study were locally obtained from the Egyptian herbal market. The difference in their active compounds compared to the herbs in the Essiac formula sold in Canada is unknown (Kabeel et al., 2018).

Active compounds in individual herbs

In one study, **burdock root water extracts showed stronger antioxidant activity than ethanol extracts** (and extracts with nonpolar solvents) (Duh, 1998).

In the same study, hot water extracts were as efficient as cold water extracts. Remember, Essiac tea is made with boiling water. Heat can deactivate some active compounds, so it's important to know that it doesn't seem to diminish the antioxidant potential of burdock root as the main constituent herb in Essiac.

The authors of the above study didn't identify the exact antioxidants responsible for this effect, but they suspect it comes from sugar-bound flavonoids such as quercetin, myricetin, and rutin.

In another study, **both the water and ethanol extract of burdock fruit blocked inflammation** and histamine production in immune mast cells (Kee & Hong, 2017).

Essiac Alcohol Extract

Alcohol: good for additionally extracting compounds slightly to moderately insoluble in water

Ethanol-water mixtures seem to be great at extracting a wide variety of phytochemicals from medicinal plants (Kerry Bone, A Clinical Guide to Blending Liquid Herbs, 2003).

Alcohol should extract the active compounds found in the water extract, plus compounds that are less soluble in water. Chemically, this makes up a mixture of polar and slightly *non-polar* actives.

Ethanol vs. methanol and other alcohols

Ethanol is not the only type of alcohol, but it's the preferred choice for herbal extraction. Methanol, another type of alcohol, is more toxic.

Many traditional preparations also use varying concentrations of ethanol. Old texts describe steeping herbs in wine for long periods and then using the resultant liquid. Ethanol is also a great preservative if used at least 20% concentration (Kerry Bone, A Clinical Guide to Blending Liquid Herbs, 2003).

Active compounds that ethanol can extract

Compared to higher concentrations, lower concentrations of ethanol (~25%) will extract more water-soluble compounds (covered in the previous section) (Kerry Bone, A Clinical Guide to Blending Liquid Herbs, 2003).

Still, the concentration of highly water-soluble active compounds like polysaccharides is likely to be lower in the alcoholic extract than in the water extract.

Traditionally, ethanolic extracts with **45-60% ethanol** are thought to extract polar and non-polar compounds if the extraction process lasts at least 3 days. These may include (Lee et al., 2011; Bae et al., 2012; Yang et al., 2016; Wang et al., 2019):

- **Certain flavonoids**, including free forms of the antioxidants quercetin from sheep sorrel and burdock root and various flavonoids from all constituent herbs
- **Lignans** arctigenin and arctiin from burdock root, which may carry antitumor and anti-inflammatory potential
- **Anthraquinones** like emodin and aloe-emodin from sheep sorrel and rhubarb root with possible cancer-fighting activity
- **Chlorogenic acids,** antioxidants rich in burdock root
- **Fatty acids** like immune-balancing oleamide from burdock root and phytosterols
- **Organic acids** such as ursolic, betulinic, and oleanolic acids from burdock root and slippery elm with antioxidant, anti-inflammatory, and antimicrobial properties
- **Essential oils**/volatile compounds with various potential health benefits

Higher ethanol levels of 70 to 90% can also extract more non-polar active compounds such as gums, resins, and oils. Drying the herbs first can reduce the need for higher ethanol concentrations Kerry Bone, A Clinical Guide to Blending Liquid Herbs, 2003).

To sum it up, the alcohol extract is likely to be higher in a greater variety of active compounds from all four constituent herbs in Essiac than the water extract.

What ethanol can't extract

Even the highest concentrations of ethanol are unlikely to extract all compounds that are highly insoluble in water (highly *non-polar*). Other types of fat-soluble chemicals are typically used in research studies if that's the goal (ether, acetone, n-hexane, and others). The downside is that most are toxic, and are thus avoided in traditional medicine.

Traditional preparations aiming to extract fat-soluble compounds usually use natural oils. This is called *maceration*. The resulting products are typically applied on the skin (with some exceptions) and are not relevant to the scope of this article.

Studies of the whole extract

A 2021 study used the alcohol-based original Essiac liquid extract to explore antioxidant and anticancer activity (Ruiz et al., 2021).

The extract increased the ability of *C. elegans* roundworms to withstand dying from excessive oxidative stress. Scientists use *C. elegans* to experimentally assess lifespan, oxidative stress, and innate immunity. Essiac liquid extract increased the roundworms' lifespan and overall health.

Active compounds in individual herbs

Lignans arctiin and arctigenin are often viewed as the most important active ingredients in burdock root. Arctigenin is thought to be anti-inflammatory, gut-protective, immune-supportive, and antioxidant. Scientists are also exploring its anti-cancer potential (Wu et al., 2014; Chan et al., 2010):

All in all, arctigenin doesn't seem to dissolve well in water. It's soluble in ethanol and organic solvents like DMSO (Arctigenin product description, Cayman chemical).

Experiments have used several solvents and enzymes in multiple steps to extract the highest amounts of arctiin and arctigenin from burdock. This is because arctiin and arctigenin are partially soluble in each of the chemicals used (water, ethanol, and others), making combined solvents the most effective (Lü et al., 2016; Liu et al., 2014).

Scientists confirmed the presence of arctiin and its derivatives in an ethanolic extract (95%) of burdock seeds (Ming et al., 2004).

Therefore, alcoholic extracts are likely to be higher in arctigenin and arctiin than the water extracts.

Studies on flaxseed suggest that it may be possible to extract lignans with higher water temperatures and pressure. Therefore, it's *theoretically* possible that burdock water extracts may also contain some arctigenin and arctiin. Studies are needed to test this (Cacace & Mazza, 2006).

Additionally, **burdock root alcoholic extract is higher in antioxidant phenolic compounds than the water extract** (~72-77 mg gallic acid/g extract vs. ~62-65 mg gallic acid/g extract) (Predes et al., 2011).

Another study confirmed the strong antioxidant activity of burdock root ethanolic extract in cells (Lee et al., 2011).

An ethanol extract of burdock root also helped reduce an inflammatory and allergic reaction in mice and leukemia cells in one experiment. Oleamide, a fatty acid, was identified as an active compound. Oleamide isn't soluble in water (Yang et al., 2016).

Another analysis reported **sheep sorrel ethanol extract had a stronger protective effect than the water extract** in mice with stomach ulcers (90.9% vs. 41.2%). The alcoholic extract was more effective at relieving inflammation, edema, bleeding, and loss of cells of the gut lining. The authors suspect that **higher emodin levels** are responsible for the observed benefits (Bae et al., 2012).

Which Essiac Formulation Is Right for You?

Water Extract/Tea

Essiac powder contains only the dried, powdered four constituent herbs in the specified ratios. It is used to prepare tea.

The powder is dissolved in and boiled with filtered, distilled, or spring water according to the manufacturer's instructions. Tea prepared this way is referred to as a water extract.

Essiac tea possibly contains a lower overall level of active compounds, but it may be higher in immune- and digestion-supportive polysaccharides. It is also the cleanest formulation.

Essiac tea prepared from the herbal powder also contains the whole plant matter, including active compounds that may be dispersed but not soluble in water. This means that, hypothetically, its level of active compounds may be higher than thought. Studies would need to test this possibility.

Essiac Liquid Extract

Essiac liquid extract is an alcohol extract with ethanol retained in the final product. It's made by extracting the plant matter with 40% ethanol over a period of time. The solution is then diluted to contain about 18% ethanol in the final product.

The ethanol dilemma

The downside of ethanol is that it can be toxic in large amounts and in people who are highly sensitive to it. Many cancer patients avoid alcohol/ethanol altogether and report bad reactions to herbal products that contain it.

Supplementing with a liquid herbal extract that contains ethanol means taking in a certain amount of alcohol on a daily basis. For Essiac liquid extract, this amounts to 60 ml/2 fluid ounces of an extract with 18% ethanol per day. This equates to less than two-thirds of a standard drink in a day (e.g. a standard drink is one shot of 40% alcohol or 43 ml/1.5 oz).

People who are sensitive to ethanol but want to take this extract may want to try taking lower doses at a greater frequency, with food or water.

On the other hand, many healthy foods also contain alcohol. For example, 100% natural fruit juices may contain up to 0.9% alcohol. Some bread and ripe bananas may contain up to 1% alcohol. The alcohol content in these foods is a result of natural fermentation that turns sugar into ethanol. One study found that children can inadvertently consume 2- to 4-fold more alcohol from food than from herbal medicines (Gorgus et al., 2016).

According to the renowned herbalist Kerry Bone, humans have evolved and adapted to levels of ethanol intake through food that are similar to those from herbal extracts (Kerry Bone, A Clinical Guide to Blending Liquid Herbs, 2003).

Liquid Extract without Alcohol

People who strictly avoid alcohol but want the benefits of the alcoholic extract in liquid form can choose Essiac daily drops with glycerin. Although this formulation uses ethanol for extraction, the ethanol is completely replaced with glycerin in the final product. Glycerin is a clear and liquid made from vegetable oils with about 95% glycerol.

Glycerol is less toxic than ethanol. Studies suggest that it has minimal adverse effects. However, glycerol is also chemically classified as an alcohol and can be toxic at high levels (Crebelli et al., 2017; Armitage & Mazur, 1984).

So, although Essiac drops with glycerin might be a better option than ethanol for some people, this formulation is not completely “non-toxic” either.

On the upside, glycerol is often used in cough syrups and we know that it can have a soothing effect on coughs and throat irritation—a possible side effect of chemotherapy (Eccles & Mallefet, 2017).

Capsules

Another option is Essiac capsules, which contain the dried alcohol herbal extract. This formulation is made by drying the liquid extract into a powder and packing it into vegetable capsules. The final product is free from alcohol.

Capsules are a preferred choice by users who don’t enjoy the taste of herbs. Essiac contains several herbal bitters that some users describe as unpleasant.

Dosing capsules is also easy when sticking to the recommended regimen, and capsules are convenient to have on the go.

Liquid vs. solid-form

Liquid extracts in general may have better bioavailability than capsules and other solid-dose preparations. Capsules have to first disintegrate in the body, while liquid formulations contain already dissolved active compounds. Although this applies to both water and alcohol extracts, alcohol extracts are better researched (Kerry Bone, A Clinical Guide to Blending Liquid Herbs, 2003).

Liquid extracts are also the preferred option for people who have difficulty swallowing capsules. Many cancer patients have esophageal damage as a result of chemotherapy or aversion to pills and prefer to take herbal liquids.

In Summary

Essiac products rely on either alcoholic or water extraction.

Users can get Essiac herbal powder and prepare a water extract at home according to the manufacturer's instructions. The water extract may be lower in several active compounds, but it's higher in immune-supportive polysaccharides.

Essiac alcohol extracts are higher in various active compounds (like arctigenin, quercetin, and emodin) than the water extract.

Essiac alcoholic extracts are available in liquid form with alcohol, in liquid form with glycerin, and as capsules containing the dry alcoholic extract. Users who strictly avoid alcohol can choose between the latter two. In general, liquid formulations have superior bioavailability.

If you're unsure which formulation is right for you, consult a care provider knowledgeable about herbal medicine. Be sure to let your doctor know if you plan on taking Essiac to avoid drug and disease interactions.

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