

Factsheet- Making Natural Inks

Homemade eco-friendly inks can be made from a variety of plant materials- choose things that have a strong colour to start with, although the ink you get may be a different colour than the plant it's made from. You can even get different colours from the same plant by using different additives.

The inks can be used to paint with a brush just like watercolours. They respond well to watercolour techniques like 'wet on wet' or sprinkling salt onto the wet ink to produce texture. You can also use them with a dip pen made from bamboo, a hollow stem/reed or a feather- there's lots of tutorials online that show you how to make your own.

These inks are not recommended for use with a fountain pen or dip pen with a metal nib as they are likely to clog and the mordant may also corrode the nib over time.

Suggested plant ingredients;

- Red cabbage
- Beetroot
- Avocado (seed and skin)
- Grass cuttings/weeds
- Deeply coloured petals (Rose, cornflower, carnations etc)
- Turmeric
- Bark, acorns, autumn leaves
- Berries
- Tea and coffee

The inks are non-toxic and bio-degradable and have a limited shelf life. To extend the shelf life store your jars of ink out of sunlight, preferably in the fridge. You can also add your choice of natural preservative to make them last a bit longer.

The artwork that you make with them will not be as colourfast as commercial paints and will slowly fade over time, so store it out of direct sunlight if you can or place it in a frame that has UV filtering glass. You can also scan or photograph your work to preserve a record of it, although this might not fully capture the subtlety of the lovely earthy colours. The other option is to use them for things that don't need to last (such as Christmas cards), or just enjoy using them in the knowledge that the most beautiful things are often ephemeral!

Mordants

A mordant is an ingredient that's added to dyes or inks to 'fix' the colour and help it grab on to the fibres of the cloth/paper. The mordant will also change the colour of the dye/ink by altering the pH (level of acidity/alkalinity) and you can get different colours from the same plant by using different mordants or by adjusting the amount. There are various things you can use as a natural mordant- many of them are things you are likely to have at home already:

- Salt
- White vinegar
- Bicarbonate of soda (used in baking)
- Washing soda
- Alum (a mildly acidic mineral powder used in cosmetics and food production- available online. I got mine from eBay, £2.50 for 100gm)

Some plants contain tannins that act as a mordant, so it's not essential to add one- although you can use one to adjust the colour and make them even more stable. These include tea, coffee, onion skins, turmeric and avocado seeds.

Preservatives

There are several things you can use as a preservative to extend the shelf life of your inks. If you have used salt or vinegar as a mordant it will help to preserve it, but it's still worth adding a few drops of one of the following;

- Isopropyl alcohol/rubbing alcohol.
- Surgical spirit
- Essential oils- Thyme (the most effective oil), Tea tree, Lavender
- Keep a whole clove in the jar.

Gum Arabic

The consistency of your ink will be improved by adding gum Arabic. Some of you may have this already as it's used for watercolours. The gum comes from acacia trees and the cheapest way to buy it is as powder or granules that you have to dissolve in hot water, but it's much easier to use the bottles of ready to use liquid. It's available from most places that sell art supplies- I got mine online for around £4.50. Just add a few drops to your jar of ink- you can experiment with different amounts.

Equipment

You will need some clean containers to store your inks- I use any recycled glass jars I can find. Make sure they are completely clean and have a well-fitting lid. Coloured glass or opaque plastic containers would also work and help to keep the ink away from the light, but it's best not to use metal (other than stainless steel) as the ink may corrode it. Add labels to your jars- I use a small piece of watercolour paper so I can paint a sample onto the label as well as writing what it is and the date that I made it for reference. Stick the paper onto the jar with Sellotape, covering the paper completely with tape to keep it clean.

You will also need a small saucepan and a spoon (not made of a reactive metal such as iron or copper; non-stick, glass or enamel are fine) - although the ingredients are non-toxic it's best to use an old one that you can keep for craft purpose as the inks may stain.

The inks need to be strained before bottling- for bulky materials like cabbage you can strain through a sieve first, pressing out as much liquid as you can before then passing it through a finer filter. I use a piece of cloth with a fairly tight weave (fold it over and use a double layer if it's very thin)- you can also use a coffee filter. Sit your filter in a funnel to pour the ink into the jar. Try not to squeeze the cloth to release more liquid as that will force particles through the filter and cloud your ink, although I do tend to do this with flower petals as they hold a lot of liquid, and also with powdered spices such as turmeric as it just forms a wet sludge that doesn't drain through the filter very well without help.

Method 1- steeping

This method of making natural ink is suitable if you are using soft plant materials like flower petals or leaves and can be adapted for powdered spices such as turmeric.

Place your petals into a clean jar and add some salt (roughly a teaspoon for one cup of petals). Squash the petals down a bit, then pour on just enough hot water to cover them. Shake vigorously to help mix- you can add a marble or glass bead to the jar if you have one to help bash the pigment out of the petals. Leave to soak overnight (or longer), giving the jar a good shake now and then. Once you can see that there's plenty of pigment in the water, filter your ink into a clean jar. Test your ink and wait for the sample to dry- if it is too pale and watery you can either add a fresh batch of petals to the ink and repeat the soaking process again, or you can put your ink in a saucepan over a very low heat for a while to evaporate some of the water and concentrate the colour. Don't overheat as that may spoil the colour. Once you are happy with it, bottle it and allow the ink to cool, then add your Gum Arabic and choice of preservative.

Method 2- heating

The other method is more suitable for tougher materials like beetroot, red cabbage, onion skins or avocado pits and involves gently heating the chopped material in a pan, along with your mordant. Start with a small quantity of mordant- you can add more later if needed. You can adjust the quantities of water to plant material depending on what you're using- suggested amounts are included in the recipes below but you don't need to be exact. Use the minimum amount of water that you need to cover the plant material in the saucepan- some ingredients (such as cabbage) will soften and shrink down as they cook-use just enough water so that it's covered once it has 'mushed down'. Keep the lid on until that point, then you can remove the lid to allow the liquid to reduce and intensify the colour. Heat very gently for 20-30 minutes, stirring occasionally so it doesn't burn on the bottom. Test your ink by dipping in a strip of paper and allow the strip to dry so you can properly assess the colour. You can add more mordant if you wish to adjust the colour- add a little at a time and test. If the ink is very pale you can heat for a bit longer, although it will darken slightly by the time it's finished. Once you are happy with it, turn the heat off and leave the pan to cool before filtering.

You don't need to measure your ingredients too precisely unless you want to try and repeat your results. Natural ingredients will vary a lot in the amount of pigment they contain, so it would be very difficult to replicate your colours exactly anyway. The recipes below are a starting point- experiment with your own ingredients and proportions according to what you have available. Most of all have fun- you will produce something unique!

RECIPES

Blackberry (dark purplish blue);

1 cup blackberries

½ cup hot water

1 teaspoon alum

½ teaspoon Gum Arabic, plus 3-4 drops of Thyme oil (other preservative)

Gently heat squashed berries, water and alum in a saucepan for around 20 minutes. Allow to cool then filter into a jar, add Gum Arabic and your preservative.

Beetroot (red)

1 raw beetroot (use two if you can only get ready cooked), chopped

½ cup hot water

½ teaspoon salt

½ teaspoon vinegar

½ teaspoon Gum Arabic

Red cabbage (greens, blues, purples)

1 cup roughly chopped red cabbage

½ cup hot water

½ teaspoon + of chosen mordant (vinegar or alum give purplish blues, washing soda or bicarb give blue/greens)

(add more mordant as needed to adjust colour)

½ teaspoon Gum Arabic, few drops of preservative

Avocado (pinkish brown)

Skin and chopped seeds from 2 avocados- clean off flesh thoroughly

$\frac{3}{4}$ cup of hot water

$\frac{1}{2}$ teaspoon of washing soda or bicarbonate of soda

$\frac{1}{2}$ teaspoon Gum Arabic, few drops of preservative

Tea/coffee (brown)

Brew some very strong black tea by leaving 4-5 teabags or $\frac{1}{4}$ cup of loose tea to stew on a low heat with around $\frac{1}{2}$ cup of water or make a very strong cup of black coffee and allow to cool. Filter if using loose tea and add preservative and Gum Arabic.

Turmeric (yellow)

If you can source raw turmeric root you can process it the same as for beetroot. If not, place a few teaspoons of turmeric powder into a jar and cover with enough hot water to thoroughly soak into it, plus a little extra. There is no need to add mordant, but a pinch of alum can be added to make the colour more orange. Shake well (including a marble in the jar helps) and leave in a warm place overnight then filter through a cloth as per method 1. Add gum and preservative. This method could be used with other ground spices too.

Roman Ink (grey/black)

Slightly different from the others, but I have included this for fun and for historical interest. It's rather 'grainy' and sticky but it's fun to use with a homemade dip pen;

5 teaspoons of crushed charcoal (either from an art supply shop or use pieces left over from a bonfire)

2 teaspoons of Gum Arabic or honey

4 teaspoons of white vinegar

Grind the charcoal as finely as you can using a pestle and mortar or use a smooth pebble/back of a spoon to grind it in a dish. Grind in the other ingredients -stir thoroughly before use each time as it tends to settle.

You can also make 'lamp black' by holding a metal spoon over a candle flame to collect the soot. Carefully scrape the soot into a container and repeat until you have enough to make a small quantity of ink (it's very time consuming!). Add a few drops of Gum Arabic and vinegar to get a thick paste, grind the ingredients together thoroughly then thin with vinegar to desired consistency.