BLUE IN THE AZORES

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MY BOTANICAL LIFE

Ancient Wisdom • Modern Application

OFICINA DE INDIGO

2022

BLUE in Portugal-Azores

Indigotin is a blue dye made from many plants found all over the world.
The Isatis Tinctoria (woad, pastel) is a European native, whereas several sorts of plants from the tropics, such as the Indigofera Tinctorial, are termed “true indigo.”
However, this dye can be found in a variety of plants. See the list below.

Brassicaceae (the mustard family)
Isatis Lusitanica- Native to Portugal, Douro region
Isatis Tinctoria- Native to Europe

Leguminosae (Fabaceae) Family
Indigofera Tinctoria- India
Persicaria Tinctoria- Japanese
Botanical genus - Indigofera
Suffructic indigofera
Michelian Indigofera
Indigofera arrecta
Persicaria Tinctoria- Japan and China
Strobilanthes cusia- Japan and China
...750 species

INDIGOFERA TINCTORARIA

ISATIS TINCTORIA (PASTEL)

PERSICARIA TINCTORIA

INTRO

Indigotin is a rare pigment with blue color that is the least common dye in nature, compared to reds, oranges, and yellows. While it can be found in a variety of natural sources, such as woad, it lacks the same intensity and consistency as Indigofera Tinctoria, the "real indigo." It doesn't require mordants (fixers) because it possesses tannin, an excellent fixative.

Natural dyes were eclipsed by the pharmaceutical industry's expanding production of synthetic dyes during the industrial revolution, and the synthetic formula was developed at the end of the nineteenth century. India and Japan, continue to use industry still use Indigo pigment in others, particularly in the denim industry.

The 15th-century maritime route of Vasco da Gama enabled the globalization of this pigment, which reached ports in Portugal, England, and Holland. Due to a lack of access to this path, the Spaniards produced Indigo in the Caribbean Islands. After rice, indigo production became one of the most important sources of income.

Capotes dyed with woad. Edicao Postal

AZORES HISTORY

Isatis Tinctoria was grown in numerous places of Portugal, but primarily on the Azores islands of Sao Miguel and then Ilha Terceira, where its was a favorable income, in turn, presented a threat to the food supply.

The production of woad began in 1445, and it was Prince Henry the Navigator (Infante Dom Henrique) who pioneered this industry with the authorization of King Afonso V.

The Azores' output peaked during the 16th century and fell in the 19th century. Dr. Vicente José Ferreira Cardoso da Costa attempted to reverse the decline of Pastel manufacturing in 1824; he blamed these situations on Taxation and the falsification of the pastel adding unknown ingredients to raise the weight were two of the reasons for its demise.
Indigo, which appeared in India and Brazil, was responsible also for its demise.

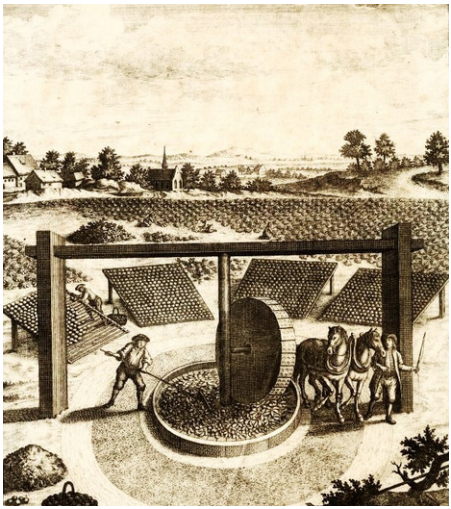
Pastel manufacture in Sao Miguel was mostly done in the south in the Ribeira Cha region due to its warm climate, with grinding taking place at mills in the Pisoes district.
Pisoes is derived from the verb "pisar," which means "to step."

In his book “Histora Insulana,” priest Antonio Cordeiro compares woad to cabbage and explains the process:

The leaves were harvested several times a year, washed, and dried. The plant was utilized one to three times.

Water was used to pulverize the woad before it was placed in the mill to be processed.

Fermented for 15 days outside (protected from the rain) in trays to make little pastels to export



Mill in 1752 in Thuringia, Germany

Ships from various ports especially England and Holland and Seville would come from the Azorean Pastel, which was a highly desirable color associated with wealth and power.

To get 1000g woad dye you need approximately 1000 kilos of woad plant so you can imagine how labor-intensive it is.

The monarchy of Portugal was responsible for the demise of the Pastel industry. The Portuguese Maritime Route, which was not highly regarded by European woad growers, enabled the trade of refined Indigo from India into the east, slowly diminishing woad agriculture and subsequently exploited was by the British East India Company.

The Portuguese king sent Pero Vaz de Evora to England and Flanders to teach artisan dyers how to use Indigo from India to dye both silk and wool.
Documents also show that Andre Rodrigues, together with Crtiovao de Vaz of Evora, negotiated with the Spanish courts on the benefits of Indigo from India before this.
Despite the woad lobby's stronghold, indigo from India was welcomed by the Spaniards. Subsequently, Germany and French banned the use of Indigo because of the Pastel (native) plan, and France applied the death penalty for dyers who used Indigo from the fart east.

ABOUT VAT RECIPES

Indigo VAT can be prepared in many ways for dyeing. The extraction of indigo from both woad and indigo consists of two basic procedures. To bring the indigo to a point where it can fix into the fabric, first increase your PH and secondly reduce your oxygen levels There are organic and non-organic recipes. Dangerous sodium-based chemicals have been used to achieve efficient vat reduction since the 1800s. Previously, humans used organic chemicals found in daily products, such as urine, to achieve a vat reduction.

Indigo can be used to color natural textiles such as cotton, silk, wool, feathers, and other materials like basket canes, willow, leather, mother-of-pearl buttons, paper.

RECIPES

1. Iron Recipe used since 1750 from the book by J. N. Liles (Grey blues) Cellulose-based fabrics only

2. Indigo Vat (Tina/Cuba) natural pigment recipe with the help of chemicals

3. Michael Garcia 1-2-3 (Tina/Cuba) natural organic pigment recipe Fructose and HennaDifficult to achieve complete reduction

4. Indigo Dyeing using the Madder Indigo vat, inspired from the Woad Medieval recipes

5. Iced Water by Rowland Ricketts(future)

RECIPE #1: IRON

(Natural pigment recipe with chemical Not recommended for protein fibers because it is too alkaline) Recipe by J.N. liles 1990

INGREDIENTS

- 20 grams of indigo
- 75 grams of iron (as ferrous sulfate) (chemical formula FeSO4) - REDUCER
- 100 grams calcium hydroxide (chemical formula Ca(OH)) - BASE

MATERIALS

- 4 liters of water 45°C
- pan
- thermometer
- electronic scale or scales
- teaspoons
- 2 containers
- 1 glass container
- spoon (stirring)
- mortar and pestle (optional) or use a magic wand)

INSTRUCTIONS

1. Make a paste with 20 grams of indigo and 120 ml of warm water (50 degrees).
2. Fill your Pyrex jar with 350 ml of very hot water and add 75 grams of iron (ferrous sulfate) to the jar. Shake well.
3. Fill pan or container 3/4 full with water bites stains.

RECIPE #2: (2 INDIGO VAT OPTION (TINA/CUBA) NATURAL PIGMENT RECIPE WITH CHEMICALS)

INGREDIENTS
15 grams of Tamil Indigo Dye
20 grams of sodium carbonate (chemical formula Na_2CO_3) - BASE
15 grams Spectralite (thiourea or thiox dioxide) (chemical formula $CH_4N_2O_2S$) - REDUCER
or 25 grams of Dithionite (chemical formula $Na_2S_2O_4$) (sodium dithionite or sodium hydrosulfite (sodium dithionite is less harmful)

MATERIALS
- 5 liters of water at 45°C
- 1 kg of fiber (yarns, fabric, etc.)
- Pan
- thermometer
- Electronic scale or scales
- pH paper
- teaspoons
- 3-4 jam jars or other glass containers
- spoon (stirring)
- mortar and pestle (optional) or use a magic wand)
- 5 liters of water at 45°C
- 1 kg of fiber (yarns, fabric, etc.)

INSTRUCTIONS
1. Wash the fiber beforehand to remove the dirt
2. In the container add 200 ml of hot water and then add 15 grams of sodium carbonate and mix well
3. Then add 100 ml of cold water (to reduce the temperature)
4. In another container place your indigo and a little warm (not boiling) water to create a paste. You can use a pestle or blender.
5. Add the indigo paste to the jug labeled sodium carbonate slowly
6. For half an hour, stir 2-3 times
7. Fill a pot with 2.5 liters of boiling water.
8. Add the remaining 5 grams (teaspoon) of sodium carbonate
9. Then add cold water to get a temperature of 45-60°C BE CAREFUL NOT TO FILL MORE THAN 3⁄4 TO GIVE ROOM TO PLACE THE INDIGO VAT
10. Then pour in your indigo very slowly, don't let the undissolved indigo get into the pot
and save it for later.
11. Sprinkle the reduction chemical and wait for reduction within 45 min

RECIPE #3 BY MICHAEL GARCIA 1-2-3 (TINA/CUBA) NATURAL ORGANIC (1 PART INDIGO, 2 PARTS CALCIUM HYDROXIDE 3 PARTS FRUCTOSE OR HENNA)

INGREDIENTS
- 15 grams of Tamil Indigo Dye
- 30 grams of calcium hydroxide (chemical formula Ca(OH)2) - BASE
- 45 grams of Fructose or Henna REDUCER
- 5 liters of water at 45°C
- 1 kg of fiber (yarns, fabric, etc.)

MATERIALS
- 5 liters of water at 45°C
- 1 kg of fiber (yarns, fabric, etc.) Materials
- Pan
- thermometer
- Electronic scale or scales
- pH paper
- teaspoons
- 3-4 jam jars or other glass containers
- spoon (stirring)
- marbles

INSTRUCTIONS (*In this recipe, it is recommended to put the dry fabrics)
1. Mix the indigo powder with warm water (40°C to 50°C,) to make a smooth paste, you can use marbles or small stones.
2. In another container, boil 200 ml of water together with the 2 parts of calcium hydroxide and then mix 100 ml of cold water to reduce the temperature.
3. Then add the Indigo container to the calcium hydroxide container.
4. Allow the calcium hydroxide to increase the PH.
5. Prepare a pan with ¾ of water (40°C to 50°C) Attention, you will put your Shibori works so you should not spend 3/4
6. Slowly pour the calcium/indigo hydroxide into the pan of water
7. Measuring the PH must be between 9-10
8. Finally, add the fructose slowly while stirring.

The container It may take up to 1-3 hours to turn brownish-green - this MEANS IT IS REDUCED AND THAT
THE BATH IS READY TO BE USED.

*EXTRACT THE FRUCTOSE FROM THE FRUIT Time- 30-60 minutes
- 5-6 bananas/ 2 liters water

RECIPE #4 BRAN AND MADDER RECIPE

INGREDIENTS
- 15 grams of Tamil Indigo Dye
- 15 grams calcium hydroxide (chemical formula Ca(OH)2) - BASE
- 2 tablespoons of wheat bran per liter

. 3 dates /or 45 g of madder/ 1 tablespoon of honey
- 7-10 liters of water at 45°C
- 1 kg of fiber (yarns, fabric, etc.)

MATERIALS
- 1 kg of fiber (yarns, fabric, etc.) Materials
- Pan
- thermometer
- Electronic scale or scales
- pH paper
- teaspoons
- 3-4 jam jars or other glass containers
- spoon (stirring)
- marbles
- heating mat

1. Simmer the crushed madder and bran for 30 minutes in two liters of water.
2. Place your 50 x 50 cm silk chiffon piece on top of the plastic sieve.
Place the sieve on top of the saucepan.
Strain the liquid with care.
Allow the liquid to cool to 40°C before pouring it into the bucket.
Don't toss out the madder and bran; set it aside since you'll use it again.
3. Fill your bucket with roughly 6 liters of warm water (40°C) and place it on the heating mat.
Make sure there's at least 4 cm of space at the top.
It's best if you leave as little air space as possible.
It is vital, however, not to fill the vat to the brim; otherwise, when you add the fiber, it will overflow.
4. Fill the bucket with 15 grams of soda ash.
To dissolve, stir thoroughly.
If the pH is less than 9, add a little more soda ash. Ideally the (PH SHOULD BE BETWEEN 8.5-9)
5. Spoon the indigo into a loose coil on the cotton handkerchief.
Suspend the bundle in the vat by tying it with a string.
6. Place a towel over the bucket and cover it with a lid to keep it away from the heating mat.
7. Turn on the heating mat.

INGREDIENTS
- 2 littles of jug stacked with indigo leafs
- cold water to blend
- ice cubes
- 1fiber (yarns, fabric, etc.)

MATERIALS
- blender
- fine muslin of other fabric

Silk for dying

Place the silk in cold water
Remove the leaves from the stalks
Fill half of the blender with ice-cold water and ice in the blender
Blend for approximately 1-2 minutes
Add any leftover leaves
Quickly strain the leaves with a loosely woven fabric, instead of a sieve onto another recipient
Place the silk in the bath for 3-5 minutes
Move around the silk to allow the indigo to penetrate the fibers
Remove the fabric and allow it to oxidize
Rinse and dry. The procedure should be done quickly.

VAT MAINTENANCE

There is no need to pour the "VAT" after we finish our dyeing process. We can keep vat for months and continue to use it. However, we advise vat that uses iron not to be kept longer than 1 week.

As long as the vat remains greenish-yellow (more brownish in the organic vat) this means that the bath is ready for the dyeing process, if it is blue this means that it is exhausted and therefore needs to go through the reduction process again.

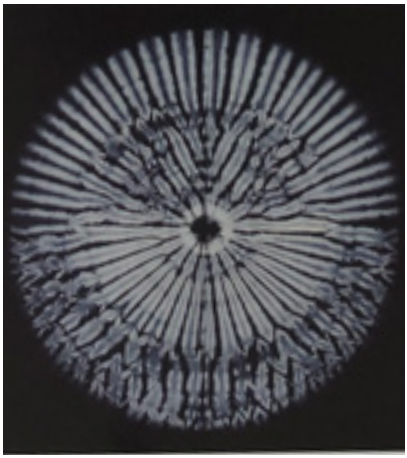
We should always keep the PH of the "vat" between 9 or 10. If it is not greenish/brown we should make a reduction add Reducer agent. Exhausted + more Indigo if you need

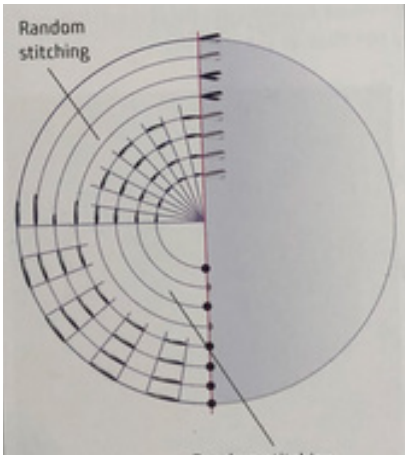
SHIBORI TECHNIQUES

Shibori is a Japanese dyeing technique, which produces patterns on fabric through the use of resistance through sewing, folding and tying. The parts where the resistance is applied the pigment not absorbed by the fabric.

ORI-NUI

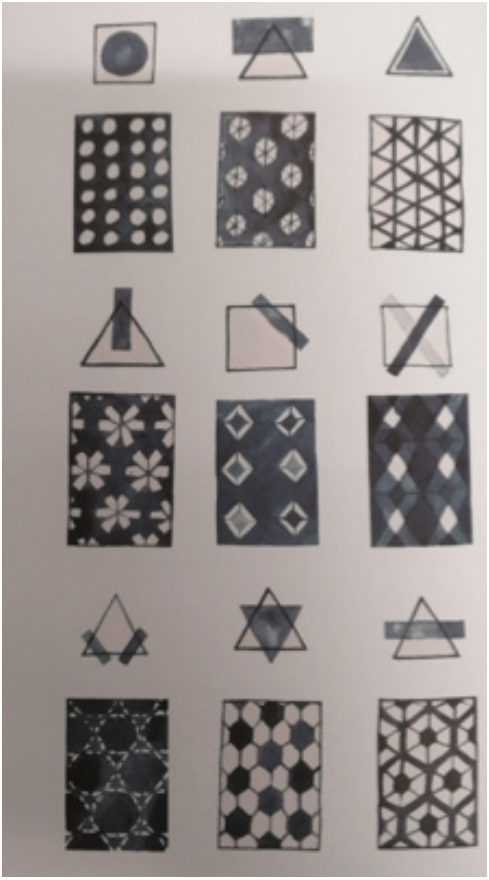
A simple running stitch is used on the cloth, then tightened to bring the cloth together. This technique allows for more pattern control and a greater variety of patterns, but is much more time consuming.





ITJAME

WOODEN SHAPES are normally used - (ROUND COVERS, SPRINGS, PAU-) We can use tweezers to obtain resistance. Here a fabric folds to one side and then to the other (like an accordion).



ARASHI

The fabric is wrapped in the cylinder and tightened with strings, creating a ruffle.

KUMO

Pleating technique, tied in sections. The result resembled a spider's web.

SUPPLIERS

UK http://www.wildcolours.co.uk/
US https://botanicalcolors.com
INDIA https://www.annegeorges.com
FRANCE https://www.green-ingredients.com/en/
GERMANY https://kremerpigments.com
PORTUGAL http://www.restaurarconservar.com/

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