ISSN Online : 2709-4030
ISSN Print : 2709-4022
Vol.8 No.3, 2024

# NATURE TO NATURAL: A STUDY OG NATURAL PIGMENTS

**NADEEM SHEHZAD**
College of Art & Design University of the Punjab, Lahore

**ABSTRACT**

*The major focus of my research is on natural pigments. The History of Natural Pigments is subject of my research. I tried my best to go back in the history to find the sources and uses of natural pigments. I reached to the point that it has been used in the Stone Age. Lots of symbols and models are formed in the caves. As we know Cave Art has its place in the history of paintings. The early sources for natural pigments were stones, mud, blood, bones, flowers and leaves of trees and charcoal etc. With the passage of time, man has searched and formed natural pigments in multiple things. This thing may be organic or inorganic. In the Stone Age, natural pigments were used as symbols. Drawing and painting have been part of human nature. In the some way, natural colors have been used for fabrics and stencils. After this, gradually man made his life and culture colorful with colors. There in the part, man had applied colors on human body as on the walls. After a thorough study of the history of natural pigments, I thought why not I utilize natural pigments even today, when readymade colors are easily available to revive the historic works of the great painters of the past. As for as was possible for me, I made natural pigments myself and used them in my paintings. These natural pigments have been prepared from sand stone, lime stone and other natural sources to use in my paintings.*

## INTRODUCTION

As subject of my research is "Nature to Natural" so as a painter, I pointed the nature and natural objects with natural colors. The most interesting thing for me is that I painted my painting with natural pigments. It took a long time to search and collect natural pigments. Some of the pigments have been prepared by me while I purchased some raw material from the market. After preparation, I used these pigments for my paintings. I painted my paintings of natural scenes in a thick form with knife and brush. My research work is mostly on natural pigments. I exposed and searched how man had used the natural pigments in past. I also focused on the questions like; which form and surface they used? Which natural pigments they utilized? Which things had been used as pigments?

During the process of this research, I came to the conclusion that from the Stone Age to the Cave Age up till today, the painters had used natural pigments for different objects. I explored that the sources for natural pigments were the stones, sand, fruits, vegetables, flowers, roots and leaves of trees, bones, blood, metals and charcoal. We can see all colors in natural pigments. Now we can include artificial colors, polish, insects and food stuff items. The difference is that in the modern era, the natural colors are tried to obtain through scientific method, some natural pigments are also mixed to modernize them. In this way, now natural pigments can be converted into multiple colors.

## HISTORY OF PIGMENTS SOURCES

Natural earthen pigments have been used since prehistoric times. With the earliest written record of their application goes back dating to 5000 BC. Each and every civilization has had a unique method for creating and using natural dyes; we have seen these methods transcend generations to generations from antiquity to the Renaissance, to contemporary practices today.

The earliest known pigments were natural minerals. Natural iron oxides give a range of colors and are found in many Paleolithic and Neolithic cave paintings. Two examples include Red Ochre, anhydrous and the hydrated, Yellow Ochre Charcoal or carbon black has also been used as a black pigment since pre-historic times.

Two of the first synthetic pigments were white lead i.e.; basic lead carbonate, and blue frit (Egyptian Blue). White lead is made by combining lead with vinegar acetic acid; Blue frit is

calcium copper silicate and was made from glass colored with a copper ore such as malachite. These pigments were used as early as the second millennium. Later before the Industrial Revolution, many pigments were known by the location where they were produced. Pigments based on minerals and clays often bore the name of the city or region where they were mined. Raw Sienna and Burnt Sienna came from Siena, Italy, while Raw Umber and Burnt Umber came from Umbria. These pigments were amongst the easiest to synthesize. The chemists created modern colors based on the originals. These were more consistent than colors mined from the original ore bodies, but the place names remained.

Historically and culturally, while retaining historic names, many famous natural pigments have been replaced with synthetic pigments. In some cases, the original color name has shifted in meaning, as a historic name has been applied to a popular modern color. By convention, a contemporary mixture of pigments that replaces a historical pigment is indicated by calling the resulting color a hue, but manufacturers are not always careful in maintaining this distinction. The following examples illustrate the shifting nature of historic pigment names.Natural pigments continued to be the base for oil paints until the 19th century when synthetic and petroleum-based pigments were introduced. Many modern artists, working today, use natural materials as they are environmentally-friendly and surprisingly easier to manipulate. Natural pigments are also used in printmaking, spun into paper threads for weaving and stitching, used to produce oil and wax crayons, and are even used in silk painting in Asian Art. Here I am trying to explore the possibilities of natural dyes in art. I want to explore that how some of the most famous painters used them in their bodies of work, and how we can use natural pigments to create our own designs today.

Nearly all paint pigments used in caves were sourced locally. They are clusters of caves existed, such as in the Dordogne region of Southwest France, the occupying artist must have used the small mines for their pigments. Storm Age painters discovered that pigments from earthy iron oxide deposits did not feed as fast as colours derived from animal and vegetable sources. But it is a fact that they went to great effort to locate a good supply of these dyes. The majority of prehistoric settlements show signs of well-used trails leading to hematite mines or digs where such pigments were obtained. For example excavations in the vicinity of the Lascaux Cave Complex suggest that Paleolithic Artists may have travelled as far as 25 miles for a reliable source of pigments.

Nearly all the colours used by Paleolithic were black and yellow. Blacks were derived from manganese ores and charcoal; while the reds, yellows and browns came from limonite and hematite (ochres and siennas), a range from reddish brown to straw colour. Tones of red- violet were probably a result of natural peroxide of iron transformed slowly and naturally into violet oxide.

Civilizations from all over the world have ever been utilizing organic material from plants, animals, and minerals to create color. They applied surfaces to create representational forms. The color of oil paint is derived from small particles of colored pigments mixed with the carrier, the oil common pigment types include:

### 1.1 MINERAL SALT

- White oxide
- Zinc oxideTitanium dioxide
- Red to yellow cadmium

### 1.2 EARTH TYPES

- Sienna or umber.

## 1.3 ANIMAL DERIVED DYES

- Cochineal insect (red)
- Cow urine (Indian yellow)
- Lac insect (red, violet)
- Murex snail (purple)
- Octopus/Cuttlefish (sepia brown)

## 1.4 PLANT DERIVED DYES

- Catechu or Cutch tree (brown)
- Gamboge tree resin (dark mustard yellow)
- Chestnut hulls (peach to brown)
- Himalayan rhubarb root (yellow)
- Indigofera plant (blue)
- Kamala tree (red)Larkspur plant (yellow)
- Madder root (red, pink, orange)
- Mangosteen peel black)
- Pomegranate peel (yellow)
- Teak leaf (crimson to maroon)
- Weld herb (yellow)
- Juglans Nigra or Black Walnut seed (brown, black, source of tannin)
- Rhus typhina or Staghorn Sumac tree (brown, source of tannin)

Mineral pigments were also traded over long distances, but they were often at great cost. The only way to achieve a deep rich blue was by using a semi-precious stone, lapis lazuli, to produce a pigment known as ultramarine. The best sources of lapis were in Asia, primarily in the Sar-i Sang Mines of Afghanistan. As a result, the pigment was prohibitively expensive in Europe due to long distance to bring there.Before the Industrial Revolution, the range of colors, that are available for art and decorative uses, was technologically limited. Most of the pigments in use were earth and mineral pigments, or pigments of biological origin. Pigments from unusual sources such as botanical materials, animal waste, insects, and mollusks were harvested and traded over long distances. Some colors were costly or impossible to obtain. Blue and purple came to be associated with royalty because of their rarity.

Biological pigments were often difficult to acquire as the details of their production were kept secret by the manufacturers.

Tyrian Purple is a pigment made from the mucus of one of several species of Murex snail. Production of Tyrian Purple for use as a fabric dye began as early as 1200 BCE by the Phoenicians, and was continued by the Greeks and Romans until 1453 CE. That pigment was expensive and complex to produce. Moreover items colored with it became associated with power and wealth.

## 1.5. NATURAL DYES OBTAINED FROM PLANTS

Natural pigments offer a tremendous versatility and accessibility. Vibrant colors can be made by using resources right from your backyard. Plants, roots, nuts, fruits, vegetables, and flowers of all different types, each and every one can generate a unique color when applied correctly. I am to maintain here some common plants that are used to generate vibrant pigments.

### 1.5.1. MADDER

Historically, madder, obtained from the roots of a madder plant, was widely used throughout the 19th century to create ruby reds. These plants were dug up, washed, dried, and grinned into powder. Most fabrics, in the past, had been dyed with madder.

### 1.5.2. WOAD

Woad was another common plant-derived pigment that was used to create blues. The color came from the leaves that were also dried and grinned into powder. They were then made into a paste.

### 1.5.3. INDIGO

Indigo soon replaced woad because it did not require mordant to create the vibrant hue. Indigo was a natural dye which was extracted from plants but now it is synthetic. Indigo was produced from many plants throughout the history but the most famous indigo dye was produced from the plants of the genus Indigofera. After that term passed through Italian dialect and then into English as the word “Indigo”.

### 1.5.4. SUMAC

Sumac is a small tree whose branches and berries can yield colors from beiges to yellows to reddish pinks to blacks when boiled.

### 1.5.5. BEETS

Beets, pickled in particular way, yield a vibrant pink color that is ideal for dying fabrics.

### 1.5.6. SAFFLOWER

This thistle-like plant was used on Egyptian textiles to create a yellow and red dye. This is extracted from the petals. It is going to be used today.

### 1.5.7. NATURAL DYES OBTAINED FROM ANIMALS

There are fewer examples of dyes obtained from animals than those retrieved from plants and minerals. Many colors had also been extracted from insects throughout history.

### 1.5.8. COCHINEAL

This red dye comes from Cochineal insects who live on cactus plants. Pre-Columbian Indians dried them out in the sun, grind their bodies, and mixed with water to produce a red powder. Cochineal is going to be used in the Canary Islands.

### 1.5.9. CARMINE

The blood from Kermes insects produces Carmine red, which today refers to a broad range of red hues that are slightly purple, but closer to red than crimson.

### 1.5.10. TYRIAN PURPLE

Murex, a predatory sea snail, is used to create Tyrian purple. It was popular in Ancient Rome. The process involved extracting the dye from thousands of snails and a significant amount of labor. Therefore it had been highly valued and even referred to as “royal purple” for this reason.

## 1.6. NATURAL DYES OBTAINED FROM MINERALS

Pigments that come from minerals are found in rocks and soil all over the world. Different minerals produce their own unique and often vivid colors. Many minerals are even roasted to intensify the color.

### 1.6.1. OCHRE

Ochre is one of the most common mineral pigments. It is widely used in Aboriginal Art, Ochre is usually a red or yellow. It is obtained from ore of iron or ferruginous clay.

### 1.6.2. UMBER

Umber is an earthy pigment, usually brown or reddish-brown. It contains both iron oxide and manganese oxide. It is typically darker than other earth pigments, ochre and sienna. Its exact hue depends upon the amount of iron oxide and manganese it contains. When heated, raw umber turns a darker brown colour that known as burnt umber.

### 1.6.3. SIENNA

This is another common mineral-based pigment. It is a form of limonite clay that is derived from ferric oxides to produce a rich earthy red. It produces darker shades from creams to browns.

### 1.6.4. MANGANESE

Test on some of the Parietal Art at Lascaux have revealed that Stone Age Artists obtained their “black” colours from a range of manganese oxides, including: the jet- blackAZURITE

Azurite is found in many parts of the world in the upper oxidized portions of copper ore deposits. This was one of the most important blue pigments used in Renaissance Art.

### 1.6.5. COBALT

Cobalt was discovered in 1802. This pure blue pigment has been used by artists like Pierre- Auguste Renoir in the 19$^{th}$ century.

### 1.6.6. ULTRAMARINE

Ultramarine was obtained from lapis lazuli. It is commonly used in Europe for jewelry and paint. This expensive blue pigment was artificially manufactured in the beginning of 19$^{th}$ century.

### 1.6.7. SPINELS

These hard and crystalline minerals generate colors by exchanging certain ions that heat and

combine with other minerals. They are available in colors yellow, orange, turquoise and blue.

### 1.6.8. VERMILLION (CINNABAR)

The Maya capital of Palenque included the famous “red lady” burial, a royal peronage whose body was coated with cinnabar, accounting for the vermillion interior of the sarcophagus. Dennis Jarvis Cinnabar, also known as mercury sulfide, is a highly toxic natural mineral found in igneous deposits all over the world. The first documented use of the brilliant vermillion color to date is at the Neolithic village of Catalhoyuk, in Turkey. Traces of cinnabar have been identified within burials preserved at the 8,000-9,000 years old site. This vermillion coated stone sarcophagus is the famous Mayan Red Queen tomb at Palenque.

### 1.6.9. EGYPTIAN BLUE

Egyptian blue is an ancient pigment manufactured by the Bronze Age Egyptians and Mesopotamia and adopted by Imperial Rome. First used circa 2600 BC, Egyptian blue decorated many art objects like pottery, vessels and walls.SAFFRON

Saffron‟s intensive yellow colour has been prized by ancient cultures for some 4,000 years. Its colour comes from the three stigmas of the crocus flower, which must be plucked and processed within brief windows of opportunity: two to four weeks in the autumns. Domesticated in the Mediterranean, probably by the Minoans, saffron is also used for its flavour as Chinese or Han Purple.

A terracotta warrior is displayed at the „China‟s Memory – 5,000 Years Cultural Treasure Exhibitions‟, one of the five grand exhibitions held to mark the upcoming Olympics at the Capital Museum on July 21, 2008 in Beijing, China.

Chinese purple, also called Han Purple, was a manufactured purple pigment invented in China about 1200 BC, during the Western Zhou Dynasty. Some archaeologists believe that the Zhou dynasty artist who invented the colour was trying to imitate a rare of jade. Chinese purple is sometimes called Han purple because it was used in painting the terracotta soldiers of the Qin emperor during the first century BC.

### 1.6.10. COCHINEAL RED

Cochineal red, or carmine, and was first produced by crushing the bodies of a pregnant beetle, by the textile workers of the Paracas culture of highland Peru, at least as long ago as 500 BC.

### 1.6.11. OCHRE OR HEMATITE

Ochre, a natural pigment which comes in shade of yellow, red, orange and brown, is the first pigment used by humans, in the middle Stone Age of Africa, at least 70,000 years ago. Ochre, also called hematite, is found all over the world and has been used by nearly every prehistoric culture, weather as paint on cave and building walls, staining of pottery or other types of artifacts or part of a burial ritual or body paints.

### 1.6.12. ROYAL PURPLE

Charles if Bourbon, later Carlos III of Spain, dressed in Royal Purple. Oil painted by an unknown

artist in 1725, and currently hanging in the Palacio Real de Madrid. A color somewhere between blue-violet and red-purple, royal purple was a dye made from a spices of

whelks, used by the royalty of Europe for their clothing and other purposes. It was probably first invented at Tyre during the Imperial Roman period of the 1st century AD.

## 1.7. ORGANIC PIGMENTS

Organic pigments are composed of carbon compounds. Before they were synthetically produced, they were usually of animal and vegetable origin. Examples of synthetic organic pigments are: alizarin, azo-pigments (the yellow, orange and red colour range), phthalocyanine (blue and green colour range) and quinacridone (a lightfast red-violet pigment).

## 1.8. INORGANIC PIGMENTS

Inorganic pigments (of mineral origins) are metal compounds. Compared to organic pigments they are few in number. Examples of natural inorganic pigments are umbers, ochres and siennas as these are excavated from the ground.**CHAPTER 2**

## HISTORY OF PIGMENTS APPLICATION

## 2.1. STONE AGE PERIOD

Stone Age artist relied on several different types of material to make the colour for their paintings. Clay ochre was the main pigment and provided three basic colours: yellow, brown and numerous hues of red. For black pigment, artists typically employed either magnesium dioxide or charcoal or burnt bones (known as born black). For white pigments, they used kaolin or ground calcite (lime white). These colourants were first ground up to powder (using animal shoulder bones as mortars), then mixed with cave water (high in calcium carbonate) vegetable juice, animal fats, blood, bone marrow, albumen, and urine to help it adhere to the cave wall. In addition, they used extenders like feldspar and biotite, or ground quartz and calcium phosphate (from crushed animal bone), in order to save on the pigment, to make the paint adhere more firmly to the cave wall and to prevent the paint from cracking when drying.

## 2.2. THE CAVE PAINTINGS

Much of El Castillo's Stone Age Art is figurative. It includes a number of outstanding drawings of horses, bison, deer and mammoths as well as some rare images of dogs. Among these, the black paintings have been assigned to the era of Solutrean Art (20,000-15,000 BCE), while the polychrome paintings, like the red mammoth, belong to the era of Magdalenian Art (15,000-10,000 BCE).

However, the Abstract Art - including some 40 red ochre hand stencils and dozens of large red discs - belongs to the earlier period of Aurignacian art (40,000-25,000 BCE). Most of the stencils are grouped on a panel in a narrow gallery (known as the Gallery of the Hands) which lies beyond the Gran Sala, although isolated stencils and pictographs can be found in deeper, more remote locations in the cave.

Most ancient wall paintings and mosaic pavements were burnished and polished in a way which must have created a similar effect to this miraculous varnish by enhancing their light reflecting capacities, as well as giving depth to the bright colors; the creation of light again

took precedence even over the effect of hues themselves. This emphasis on light continued into the middle ages, whose most characteristic large scale media for figurative decoration were glass mosaic and stained glass, and for smaller works, gilt framed altarpieces and liturgical objects in gilt, gemstones and enamels.

Natural pigments were used to create some of the most iconic paintings of art history. Azurite, a carbon mineral, was used in Italian Renaissance painter Raphael‟s Madonna and Child Enthroned with Saints. Cadmium red, a mineral pigment, was used to create Henri Matisse‟s The Red Studio. Today, we can draw inspiration from the greats, and use natural pigments for a wide variety of art projects. Once we start to master your skill, experiment with more complex use of the colors.

Pigments were produced on a larger scale by ancient Egyptian and Chinese cultures. The Egyptians were credited with many pigment advances through 1300 BC. They discovered that washing pigments would strengthen and purify the color. They also produced new materials and introduced the process of lake mining, which involves fixing dyes onto a transparent white powder base to produce pigments like madder lake and carmine lake. Ancient Egyptian art often features pigments such as azurite, a blue copper mineral, and realgar, an arsenic sulfide mineral. Chemical tests found traces of alizarin, a pigment extracted from madder plants, in the tomb of King Tutankhamun in Egypt.

Mineral pigments continued to be used by painters through the middle Ages. Pigments during this period were often mixed with egg and water to create a dried protein that would bind the pigment to the substrate. Natural chalks shaped into sticks produced bright pigments and were used by the likes of Michelangelo and Rembrandt as well. By the 15th century, egg was replaced by walnut or linseed oil, which dried slower and created a more versatile paint.

## 2.3. PIGMENTS USED IN EGYPT AND CHINA

Pigments were produced on a large scale by ancient Egyptian and Chinese cultures. The Egyptians were credited with many pigment advances through 1300 BC. They discovered that washing pigments would strengthen and purify the color. They also produced new materials and introduced the process of lake mining, which involves fixing dyes onto a transparent white powder base to produce pigments like madder lake and carmine lake.Ancient Egyptian art often features pigment such as azurite, a blue copper mineral, and realgar, and arsenic sulfide mineral, Chemical tests found traces of alizarin, a pigment extracted from madder plants, in the tomb of King Tutankhamun inn Egypt.

Mineral pigments continued to be used by painters through the middle Ages. Pigments during this period were often mixed with eggs and water to create a dried protein that would bind the pigment to the substrate. Natural chalks shaped into sticks produced bright pigments and were used by the likes of Michelangelo and Rembrandt as well. By the 15$^{th}$ century, egg was replaced by walnut or linseed oil, which dried slower and created a more versatile paint.

## 2.4. UPPER PALEOLITHIC CAVE ART

The glorious paintings that were created during the upper Paleolithic period in Europe and in other locations were results of human creativity and the input of wide range of colors, created from natural pigments mixed with a wide variety of organic substances. Reds, yellows, browns and blacks were derived from charcoal and ochre, blended to make fabulous lifelike and abstract representations of animals and humans alike.

## 2.5. DECORATION

Ancient pigments were created by all cultures at least since the early modern humans used ochre to stain themselves, to paint walls and objects, some 70,000 years ago in South Africa.

## 2.6. USE FOR THE BEAUTY OF BODY

Naturally occurring pigments such as ochres and iron oxides have been used as colorants since prehistoric times. Archaeologists have uncovered evidence that early humans used paint for aesthetic purposes such as body decoration.

In ancient Egypt, Cleopatra couldn‟t exactly send a salve to the drug stone for a new lipstick. So the queen of the Nile turned instead to her cosmetic wizard, who transformed flower blossoms and fine clay into cornucopia of lip and check rouges and crushed ant eggs into eyeliner.

Pigments and paint grinding equipment believed to be between 350,000 and 400,000 years old have been reported in a cave art Twin Rivers, near Lusaka, Zambia.A natural pigment is one that is found in nature that is grinned, sifted, washed, and in rarer cases, heated to create a desired hue. Since their inception, natural pigments served many artistic purposes for ancient cultures around the world. The first paintings, from prehistoric times, were cave paintings applied by brushing, smearing, dabbing, and even spraying techniques. Artists used whatever pigment was available to them through natural resources. This included earth pigments such as red and yellow ochre, charcoal, and white from ground calcite.

"Anatomically modern man" (Homo sapiens sapiens) was creating, mixing and using colour pigments many millennia before he began drawing or sketching. The discovery of a 100,000 years old "paint workshop" in the, in South Africa - complete with various ochres, bones, charcoal, grinding-stones and hammer-stones, abalone shell containers and mixing vessels, but with no evidence of contemporaneous cave painting - suggests that the pigments were being used for body painting and face painting, rather than cave art. The same can be seen for archeological sites in Australia, such as the Arnhem Land rock shelters Malakunanja II (53,000 BCE) and Nauwalabila 1 (53,000 BCE), where used lumps of red ochre pigment were discovered, but no sign of any Aboriginal rock art. In other words, by the time that modern humans started to create the first prehistoric art, a reasonable minority of them would have had some experience in sourcing, extracting and blending pigments for personal decoration. In his book "The Art of Prehistoric Man in Western Europe", the Paleolithic scholar Andre Leroi-Gourhan (1911-86) describes how the floors of Stone Age caves and rock shelters were commonly impregnated with a layer of reddish ochre, up to eight inches deep. Leaving one in no doubt that Aurignacian people dyed their bodies, their animal skins and their spears, that in fact ochre was used for decorative purposes in every aspect of their domestic life.

## 2.7. PIGMENTS AS SOURCE OF INCOME

"It was used literally as a currency. They were trading one length of cloth, in exchange for one human body." Enslaved Africans carried the knowledge of indigo cultivation to the United States, and in the 1700s, the profits from indigo outpaced those of sugar and cotton.**CHAPTER 3**

**PREPARATION AND PROCESS OF PIGMENTS**

## 3.1. PREPARATION AND PROCESS OF PIGMENTS

1. I cut down Black Carrot and Beet and put them in water pot to be cooked on low flame of fire. When the water became a solution, and then refines it with cotton cloth. After this, I put the material in an open space to be dried. Then I prepared the pigments in the grinding stone to make its powder.

2. I brought stones and mud color and then grinding the material in grinding stone, I soaked them in water. A few days, I change water of material. Then refining it with cotton cloth and put it in a pot. The upper level water has been powered, the color was ready.

3. Lime stone and sand stone also have been soaked. After the evaporation of gases, I refine it with cotton cloth. I ground the material and prepare the pigments.

## 3.2. SURFACE

I brought plywood, according to required size and filled it to close the spaces. After drying the filling, I used sand paper to plain its level and then uses the pigments for my painting.

## 3.3. BINDER

- Wood Binders
- Gum Arabic
    - Local
    - Sudan
- Jiggery
- Soup of Cow Feet
- Eggs Yolk

## 3.4. TOOLS

- Brushes
- KnivesPalettes
    - Ceramics
    - Glass
- Muller for Mixing of Pigments
- Grinders
    - Stone Grinders
- Bowls of Ceramics
    - Big Size
    - Small Size
- Spoons

- Large Size
- Small Size

- Sand Paper

- Cloth for purifying of pigmentsCHAPTER 4

**APPLICATION OF PIGMENTS**

After the preparation of natural pigments, I painted the natural scenes on plywood in the form of strokes with knife and brushes. Gum Arabic, Jiggery, soup of cow‟s legs and egg yolk were used as binder. I tried to make the pigments to be absorbed on the lines of texture and lines of wood. I completed my land scape in the form of texture on wood. I completed an abstract landscape with bricks powder after ground the bricks of different colors.

## 4.1. PREPARATION AND PROCESS OF PIGMENTS

1. I cut Black Carrot and Beet and put them in water pot to be cooked on low flame of fire. When the water became a solution, and then refined it with cotton cloth. After this, I put the material in an open space for drying up. Then I prepared the pigments in the grinding stone to make its powder.
2. I brought stones and mud color and then grinding the material in grinding stone, I soaked them in water. A few days, I change water of material. Then refining it with cotton cloth put it in a pot. The upper level water has been dried and the color was ready.
3. Lime stone and sand stone also have been soaked. After the evaporation of gases, I refine it with cotton cloth and grounded the material and prepare the pigments.

## 4.2. SURFACE

I bought plywood, according to my required size and filled its spaces. After drying the filling, I used sand paper to make the level plain. Then I use the pigments on the wood surface.

ISSN Online : 2709-4030
ISSN Print : 2709-4022
*Vol.8 No.3, 2024*

**CHAPTER 5**

**INTRODUCTION OF PIGMENTS**

## 5.1. KINDS

- Inorganic
- Organic
- Iron Oxide

## 5.2. NAMES

- Geru (Ochre Red)
- Huramchi
- Ramraj (Ochre Yellow)
- Multani Mitti
- Shingraf
- Azure (Lapis Lazuli)
- Black (Pure Carbon)
- Zinc (White)
- Titanium (White)
- Sandhur (Red Lead)
- Indigo (Neel)

## 5.3. FORMS

- Stone
- Powder

## 5.4. SOURCES

- Stones
- Muds
- Fruits
- Flowers
- Leaves
- Roots
- Wood
- Seeds
- Bones
- Blood
- Insects
- Coals
- Irons

## CONCLUSION

Although it was a very hard task to go back in the past and explore the very essence of natural pigments. I, not only, studied the whole history of natural pigments, but I also tried my best to find those natural pigments in this modern era. The most difficult work was the preparation and application of the natural pigments in practical. My thesis is actually a presentation and explanation of natural pigments in the form of paintings. I did not confine myself up to a few paintings. I painted a variety of paintings with different pigments and different binders.

As the preparation of pigments is a scientific process now. We have to focus on quality and quantity of pigments. After the application and preparation of natural pigments, I came to the conclusion that most of the painters and peoples are unaware of the dangers of modern synthetic pigments. Man‟s life had been initiated with the nature and the real base of human being is nature. Therefore, it is a fact that man has to go back to nature. The journey from nature to natural is the only survival of human being.

**BIBLIOGRAPHY**


- Book – Colour Chemistry by R.M. Christie published by the Royal Society of Chemistry, Thomas Graham House, Science Park, Milton Road, Cambridge CB4 OWF, UK
- Book – Nature‟s Palette, The Science of Plant Colour by David Lee published by The University of Chicago Press, LTD, London 2007
- Book – Bio Pigmentation and Biotechnological implementations by Wiley Blackwell edited by OM V. Singh. Division of Biological and health sciences, University of Pittsburgh, Bradford, PA, USA
- Book – Traditional Architecture crafts of Pakistan: History of Techniques by Talib Hussain, Al-Faisal Nashran, Ghazni Street Urdu Bazar, Lahore
- Book – Complete Colour Harmony by Tina Sultan and bride M. Whelam, published in the USA in 2004 by Rock Port Publishers
- Thesis Report of Saeed Ghani, MPhil Fine Arts, Session 2016-18, University College of Art and Design, Punjab University, Lahore
- https://www.britannica.com/technology/pigment
- https://www.dyes-pigment.com/
- https://www.thefreedictionary.com/
- https://www.earthpigments.com/
- https://www.earthmagazine.org/
- http://www.webexhibits.org/
- http://www.historyofjeans.com/