

## Chapter 2

# Fibers and Natural Dyes Used in the Textile Industry During the Historical Egyptian Eras

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### ABSTRACT

*The textile industry through the ages has been a human need, in that it fulfills a need for clothing that protects his body from the heat of summer and the cold of winter. Man needed materials suitable for that purpose, so he was able to use various types of natural fibers to make textiles, the most important of which are flax fibers, cotton fibers, wool fibers, and silk fibers. Different colors, the most important of which are madder dye, safflower dye, indigo dye, etc., This chapter will present the most important types of natural fibers and natural dyes used in the manufacture of historical textiles.*

### INTRODUCTION

The textile industry through the ages has been a human need, in order for a person to fulfill a need for clothing that protects his body from the heat of summer and the cold of winter. Man needed materials suitable for that purpose, so he was able to use various types of natural fibers to make textiles, the most important of which are (flax fibers - cotton fibers - wool fibers - silk fibers). Different colors, the most important of which are (madder dye - safflower dye - indigo dye.... etc.). This chapter will present the most important types of natural fibers and natural dyes used in the manufacture of historical textiles.

### Natural Fibers

The types of natural fibers used in the manufacture of historical textiles have varied over the ages, depending on the type of prevailing fibers. It is even possible to determine the time and spatial period to which

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these textiles belong, by knowing the type of fibers and natural dyes that were used in textile dyeing, as well as the textile structures of these historical textiles (Tímár-Balázs & Eastop, 2012).

The fibers had characteristics suitable for the textile industry, for example, the flax fibers were distinguished by their calm white color and their high ability to reduce the human sense of high temperature. Therefore, the ancient Egyptians considered them sacred fibers that were frequently used in their daily life, especially in places and times of worship inside temples (Buschle, Fanter, and Loth, 1999; Ki et al., 2007).

The archaeological discoveries inform us that primitive man relied on wearing animal fur, but he was able to find other, more comfortable and better-looking alternatives to use as his clothing. Textile fibers differ in their basic properties such as softness, flexibility and mechanical properties. Therefore, the properties of manufactured fabrics differ among themselves according to the type of textile fibers. The fibers that were used in the manufacture of historical textiles varied between plant fibers such as flax fibers, cotton, jute, ramie and hemp, in addition to animal fibers such as wool fibers, silk, and camel hair (Brier and Hobbs, 2008).

There are several general properties required in the fibers used for fabric, the most important of which are the following:

1. **The length of the fibers:** it depends on them in the spinning stages so that the fibers can stick together to form the thread.
2. **Durability:** It helps the fibers to withstand the tensile strength and pressure that they are exposed to during spinning and weaving processes, and then give the fabric the necessary strength after weaving.
3. **Accuracy and softness:** The softness of the fibers varies from one material to another. For example, silk is given soft, thin fabrics, unlike wool.
4. **Moisture absorption:** It is a feature that makes clothes comfortable, especially in the summer, in order to absorb sweat, and this feature also affects the degree of acceptance of the material for the dye (Karimah et al., 2021).

## **Cellulose Fiber**

### **Linen Fibers**

The ancient Egyptian outperformed himself in the linen textile industry, which occupied a lofty position in the life of the ancient Egyptian, and even exceeded that, as it became a sacred industry and had a protective goddess. The manufacture of linen textiles was considered a woman's job, given that Isis, one of the gods in the ancient Egyptian faith, used to weave clothes for her brother and husband Osiris) Crowfoot and Davies, 1941).

Linen remained the most common and used in daily life throughout ancient Egypt. This is because it is well suited to the hot Egyptian climate, as it was made of loose clothes that allow air to circulate throughout the skin. The ancient Egyptians preferred white linen clothes that are not colored. Linen textiles were also used in the mummies' wrappings, because linen was a symbol of purity and purity in ancient Egypt (Sarangi and Singh, 2021).

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