

# Chapter 8

## CHEMICAL PROPERTIES AND UTILIZATION OF TREE BARKS

Halil Turgut SAHİN<sup>1</sup>

### Introduction

Although, bark does an important function of protecting the tree, it also serves as a food, shelter, or both, for some creatures that are keen to get to the nutritious cambium, or the wood beneath it. Hence it is serves as biological diversity in the forest.

However, surplus of bark is one of the important residue problem facing the forest product industries. Especially in the composite and paper industry, the volume of bark residue is so great that it must be continually removed from plant sites. On the other hand, the bark has one of the useful byproducts for the right economic conditions or the development of satisfactory commercial processes. Thereby, a long history of utilization of tree barks ranging from simple products (i.e. cork, fiber, gums, resins, flavorings, poisons) to complex medicinal chemicals (i.e. tannins, dyes, foodstuffs, antibiotics).

The tremendous range of products obtainable from bark is a reflection not only of the complexity itself, but also of the extreme differences between barks of different species. On the rough estimation, bark comprises about 7 to 24% of a typical log by volume on a dry weight basis (Arslan, 2008). Since one of the major costs in processing any natural material is the cost of collection, for which costs have already been paid, has become increasingly attractive as a potential raw material.

The barks has previously disposal problem but in these days, it can be useful for a number of aims. Some of the important reported utilization of tree barks as; fuel production (Misra & et al., 1993), soil amendment (Barney & Colt, 1991), various type composite manufacturing (Kain & et al., 2018; Lakreb & et al., 2018), adhesive additives (Pizzi, 1993; Pizzi & Mittal, 2003), ornamental products (Harkin & Rowe, 1971), medicinal purposes (Feng & et al., 2013), insulating material on soil (Skaven-Haug, 1963) and for house constructions (Pásztor & Ronyecz, 2013), so on. However, the easiest and most common utilization is to burn bark to recover energy used to power many parts of mills.

The vast of literature on bark has already been reviewed and pointed by a number of researchers. Some excellent bibliographies provide a thorough index to the literature on bark (Harkin & Rowe, 1971; Laks, 1991, Pásztor & et al., 2016). It is

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<sup>1</sup> Applied Sciences University of Isparta, Department of Forest Products Engineering  
32260 Isparta-Turkey, E-Mail: [halilsahin@sdu.edu.tr](mailto:halilsahin@sdu.edu.tr)

## Bark As a Food Sources for Some Creatures

A number of scientists have already found that some barks of tree are an important food source for the European beaver (*Castor fiber*) while the inner bark of certain hardwoods should be readily digested by some animals. Voles (*Microtus* spp.) often eat the bark at the base of young trees, killing young saplings (Bucyanayandi & et al., 1990). Deers sometimes browse on the bark of aspen trees when other food is not available in hard winters. Beavers usually coppice trees before eating the bark. By felling a tree, they actually encourage it to send up new growth, which eventually provides young bushy habitat for nesting birds, and allows light to reach the forest floor (Nolte & Dykzeul 2000). These all are obviously damaging to trees. Also, when a tree is killed or harmed by bark damage, valuable dead wood habitat can be created for fungi, insects and many other organisms (Harkin & Rowe, 1971).

## Conclusions

The outer bark, which consists mainly of periderm or cork layers, protects the wood tissues against mechanical damage and preserves it from temperature and humidity variations. However, the bark of different trees has evolved to make best use of the environment. Many wood species (i.e. scot pine, red pine) have very characteristic thick protective layers on their bark, and it is thought that leaving a fertile bed on which seeds can germinate and in areas more prone to fire the bark may become locally adapted to offer extra protection.

Both hardwood and softwood barks can be mixed with soil to give media for packing root balls of young trees and some plants could grow better in bark than in soil. Bark should also be a suitable growing medium for mushrooms, and ground bark is finding some use for covering school playgrounds. It has also a number of decorative and practical uses around the house. It helps cut down on weed growth in flower beds.

Bark are lightweighs and this creates a problem in transportation over long distances for economical considerations. However, debarker locations near farming areas open up potential large-scale markets, and in cattle or poultry raising areas the marketing of bark as livestock bedding or chicken litter should be advantageous. Moreover, locations near a large city offer possibilities of preparing balanced soil conditioner/or mulches for retail sale to the home gardener, as well as for substitutes for the nurseryman's peat moss.

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