CHAPTER 4

SELECTION, COLLECTION, IDENTIFICATION OF PLANTS AND EXTRACTION METHODS

4.1 INTRODUCTION

This chapter discusses the selection, collection and identification process of suitable parts of plants and their extraction techniques to coat medical bandages.

4.2 SELECTION OF PLANTS

Identification of diseases is purely based on the usage of bandages in regular conventional treatment. In this research work, studies on coating of curative plants on bandages are mainly focused to cure diseases listed in Table 4.1 which provides the details of 11 selected plants, their parts used for extraction and their curative activity.

Out of the 11 selected plants, Dodonaea viscosa, Ziziphus jujuba, Moringa oleifera, Cedrus deodara and Celastrus paniculatus were finalized for this research work. The remaining medicinal plants were found not suitable for this research work.
Azadirachta indica was later dropped because of the watery nature of the stem extracts when extracted using novel pyrolyser. Extracts from G.glabra, S.reticulata, Dashmool, C.quadragularis did not show any antibacterial activity during the initial trials and thus were dropped out of the work. Dry extract obtained from C.mukul was not found to be suitable for coating on yarn and fabric surfaces during the trials and thus was not used further in this research work.

4.3 COLLECTION OF PLANT MATERIAL

The stem parts of the plant D.viscosa and Z.jujube were collected from the hilly area of Maruthamalai, Coimbatore District, Tamilnadu, India.
For the identification of the plants, twig containing leaves and flowers was also collected. Plant parts of Cedrus deodara and Celastrus paniculatus could not be collected in the areas surrounding Coimbatore. Kisalaya Herbals, Indore, India, an authorized dealer of herbal products in India provided the plant parts of Moringa oleifera, Cedrus deodara and Celastrus paniculatus with their authentication certificate.

### 4.4 IDENTIFICATION OF PLANTS

Dodonaea viscosa (L) jacq. was identified by Dr. V. Sampathkumar, Scientist, Botanical Survey of India (Government of India), Southern Regional Centre, TNAU campus, Coimbatore. The authentication certificate bearing number BSI/SRC/5/23/2010-11/Tech-1589 was documented for reference. The herbarium material was deposited at the Karpagam University Herbarium Centre and was acknowledged by the centre.

Ziziphus jujuba was identified by Dr G V S Murthy, Scientist “F” and Head of the Office, Botanical Survey of India, (Government of India) Southern Regional Centre, TNAU campus, Coimbatore as Ziziphus mauritiana Lam. [synonym: Ziziphus jujuba (L.) Gaertn]. The authentication certificate bearing number BSI/SRC/5/23/2010-11/Tech-1619 was documented for reference. The herbarium material was deposited at the Karpagam University Herbarium Centre and was acknowledged by the centre. Leaves of Moringa oleifera, heartwood of Cedrus deodara and roots of Celastrus paniculatus were authenticated by Kisalaya Herbals, Indore, India, which is an authorized dealer for herbs and herbal extracts in India.

### 4.5 SELECTION OF EXTRACTION PROCESS

The traditional medical practitioners use a process, which is crude equivalent to pyrolysis, to extract oily substances from the stem parts of
plants. As pyrolysis is a new method of extracting active plant matter, it was decided to adopt this method scientifically. Study of the traditional process and the fabrication of a novel pyrolyser are discussed in Chapter 5.

Solvent extraction was the other method used for dry extracts as it is one of the most widely used methods. The extraction processes are discussed in detail in Chapter 6.