

Review of Literature

2. REVIEW OF LITERATURE

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2.1 Cotton

2.1.1 Introduction

Kane (2011) says Cotton ‘The king of fibers’ also known as ‘white gold’ is an important fibre of India being cultivated over an area of about 9.5 million hectares. Narayanan (2012) Cotton is more than one way, the divine gift as the most pristine purest cellulosic spinnable fiber in nature for human clothing. Ghosh (2004) states among the seeds and fruit fibers, cotton has grown in stature as the most important textile fiber in the world, in fact, cotton is the backbone and basic foundation of the world’s textile trade and industry. Cotton is the purest form of cellulose. Cotton fibers are grown in plants as long hairs attached to the seed in the boll of the plants. Cotton belongs to ‘Mallow’ or Gossypium family. Cotton is the most widely used textile material because of its properties such as relatively low cost, fine cross section, high strength, durability, thermal stability, good mechanical properties, moisture absorbency and comfort to wear delivers Sundrarajan (2012). Malik (2007) says Cotton; most popular amongst natural fiber is admired by consumers all over the world for its fascinating feel, comfort and versatility. According to four percent of global fiber consumption, cotton is preferred for a wide range of applications from apparel to home textiles and a variety of specialized application.

2.1.2 History of Cotton

The first cotton fabric dates back to approximately 3,200 BC, as per evidence from the excavation and by fragments of cloth found at the Mohenjo-Daro archaeological site on the banks of the River Indus. The cultivation and manufacturing of cotton have been practiced in India since pre-historic times. From India, cotton textiles probably travelled to Mesopotamia. The trade in cotton is assumed to have been started around Rome in the 4th century. Cotton was cultivated

by the inhabitants of the Indus valley civilization by the fifth millennium BCE –forth millennium BCE. The Indus cotton industry was well developed and some methods are used till the modern industrialization of India well before the Common Era. The use of cotton textiles had spread from India to the Mediterranean and beyond explains Supriya (2010).

According to the Columbia Encyclopedia (2009), cotton has been spun, woven and dyed since prehistoric times; it clothed the people of ancient India, Egypt, and China, hundreds of years before the Christian era. Sheila (2009) delivers in the fifth century B.C. the Greek historian, Herodotus reported that in India there were "trees growing wild, which produce a kind of wool better than sheep's wool in beauty and quality, which the Indians use for making their clothes." During this period, the famous Ajanta Cave carvings show innovative cotton growers in India had invented an early roller machine to get the seeds out of the cotton. By the Guptan period, circa 200 AD, the Indians were selling cotton as a luxury good to their neighbors in the east and west, the Chinese and the Parthians. Further west, the Roman considered cotton as luxurious and as expensive as silk, which they bought from Arabic or Parthian traders. Like Herodotus, the Roman author and philosopher Pliny wrote that in India there were, "trees that bear wool" and "balls of down from which an expensive linen material for clothes is made" In the following century, cotton was introduced from India into Greece by Alexander the Great, although the early Greeks and Romans used cotton for awnings and sails as well as clothing. The trade in cotton and cotton goods spread west wards we find it in Italy in the fourteenth century, Germany, Prussia and England in the sixteenth century, France in the seventeenth century and Russia in eighteenth century states Barker (2009). In modern, India, the cotton industry could, once again, compete in the world market. There is a still great diversity in the traditions and methods used to produce Indian cotton. Weavers often work in close family structures where ancient skills are passed from generation to generation and there is a great pride in the work, the fiber and the rich history surrounding even the most simple cotton fabric evokes Boyle (2010).

2.1.3 Importance of cotton

Cotton is a part of our daily lives starting from the time drying our faces in a soft cotton towel in the morning until we slide between fresh cotton sheets at night. It has hundreds of uses, from blue jeans to shoe strings, clothing and household items are the largest uses, but industrial products account from many thousands of bales. All parts of the cotton plant are useful says Thomas (2006). Cotton is an important textile fiber for human clothing and certain other needs ever since the fiber of the cotton plant was first observed and identified for its potential and the art of hand spinning and its numerous other uses were identified now cotton is grown as a commercial crop for textiles and technical textiles in over seventy countries in the world profound Ravindranth (2010)

2.1.4 Types of Cotton

Cook (2005) profound many varieties of cotton plant are grown commercially in different parts of the world, under a wide range of growing conditions. As a result, there are many different grades and qualities of cotton. Commercial cottons may be classified broadly into three categories with reference to the staple length. **Staple length 1-1.5' (26-65mm)**, includes the fine, lustrous fibers which form the top qualities of cotton. The fibers are generally of 10-15 microns, diameter 1.1-1.8dtex. Sea upland, Egyptian and American pima cottons are in this category. These high quality cottons are in comparatively short supply. **Staple length 1/2-1 5/16' (12-33mm)**, includes the medium strength, medium luster cottons which form the bulk of the world crop. The fibers are generally of 12-22 microns and diameter 1.4-2.2 dtex. **Staple length 3/8- 1(9-26mm)**, includes the coarse, low grade fibers which are often low in strength and have little or no luster. The fibers are generally of 13-22 microns and diameter of 1.5-2.9 dtex evokes Brown (2002).

2.1.5 Properties of Cotton

According to Bismarck (2005) the color of cotton ranges from creamy white to dirty gray depending upon the conditions under which it is produced. Moorthi (2005) Fiber length is described as “the average length of the longer one-half of the fiber (upper half mean length)” this measure is taken by scanning a “beard” of parallel

fibers through a sensing region. Typical lengths of cotton might range from 0-1.36 inch. Cotton comes from the cotton plant; the longer strand types such as Pima or island produce the finest types of cotton fibers. Fineness is one of the important properties of cotton fiber that plays a paramount role in determining the spinning capacity of cotton. It is measured in micronaire instrument. It denotes the cross-sectional dimension of the fiber. The fineness is usually expressed in micrograms/inches profound Arindam (2004). Variender (2008) reveals Strength of fiber is indicated by the ability to resist being pulled or torn apart when subjected to stress or tension. Cotton is relatively strong due to intrinsic structure of layers of crisscrossed, minute, spiraled, fibrils that compose the fiber cell. Strength is also determined by the character of the cotton yarns, which should be long staple tightly twisted. Compact construction represented by high thread count, helps a fabric keep its shape and give longer wear. Mishra (2000) says when load is applied, the length increase. The change in length with respect to the original is defined as extension or elongation. Average fibre elongation at break is about 5% to 10%, exactly around 6% to 8%. In t of the cotton fiber, the fibrils spiral round at an angle of about 20° to 30° to the fibre axis. In general, increasing the helix angle reduces the resistance for extension. Rastogi (2009) profound relatively cotton is elastic due to its crystalline polymer system and for this cause cotton textiles wrinkle and crease readily. Cotton has ability to conduct heat therefore it is called 'cool' fabric. It allows body heat to pass through the fabric and provides comfort to body especially in hot summers. Cotton can withstand hot ironing temperature. It scorches at about 150°C and a burn at 246°C delivers Arora (2010). Cotton fabrics have low resiliency and wrinkles easily unless finishing is given. Resiliency means that the fibers can be compressed or crushed and, on release of pressure, tend to its original shape. This quality causes the fabric to be wrinkle resistant speaks Mishra (2012). Cotton swells in a high humidity environment, in water and in concentrated solutions of certain acids, salts and bases. The swelling effect is usually attributed to the sorption of highly hydrated ions. The moisture regain for cotton is about 7. 1-8.5% and the moisture absorption is 7-8%. Cotton is attacked by hot dilute or cold concentrated acid solutions. Acid hydrolysis of cellulose produces hydro-celluloses. Cold weak acids do not affect it. The fibers show excellent resistance to alkalis profound Raghavendra (2004). The term

cavitomas describe cotton fibers damaged by micro-organisms, such as cellulolytic bacteria and fungi, all the cotton contains populations of micro-organisms that increase if the right conditions for their growth are applied. Moisture and warmth are the chief criteria required to propel micro-organism population says Gordon (2004).

2.1.6 Advantages of Cotton

The dominance of cotton in textile industry is due to its varied advantages such as ability to withstand the rough laundering treatments, especially under alkaline conditions, good perspiration absorption characteristics, comfort during wear, and the ability to take up the wide range of dyestuffs which altogether make cotton ideal for apparel use suggests Teli (2012). Cotton is the major textile fiber in many countries globally, and is being preferred by the vast majority of people due to its comfort and non-allergic virtues profound Senthil kumar (2010). Yadav (2007) reveals Cotton fabrics are easy to launder; they can also be dry cleaned. The wear-life of cotton is superb since the fabric is strong. Cotton conducts moisture away from the body and permits the cooler temperature outside to reach the body, so it is cool for summer. Since short cotton fibers nap readily, cotton can be made warm when necessary. Cotton fabric absorbs perspiration and keeps the wearer comfortable speaks Rastogi (2009).

2.1.7 Disadvantages of cotton

Das et.al (2012) suggests there are some disadvantages associated with cotton fiber, including low resilience, poor resistance to micro organisms, moulds, degradation in acidic conditions and the requirement for thorough cleaning and bleaching for many applications. Cotton fibers also lose strength when exposed to acids.

2.1.8 Uses of cotton

Cotton considered quite versatile it can be converted into fluffy as well as firm yarns. A wide range of fabric construction methods can be employed including weaving, knitting as well as nonwoven techniques. Cotton is used universally for a variety of apparel. It finds extensive usage in home textiles delivers Sekhri (2011). Cotton has a bright future in this growing sector of fabrics. Hygiene and other

absorbent products are the major markets for cotton fabrics. Raw cotton can be used for many products such as moldable composites, furniture and bedding pads, and for several products produced through the hydro entangling process. Absorbency, wet strength and breathability of cotton gives natural advantages to many products. The biodegradability of the fiber as well as its renewable resource makes it an environmentally safe product to use delivers Nilesh (2011).

2.2 Weaving

A woven cloth is formed by the interlacement of two sets of yarns, namely, warp and weft yarns. These yarns are interlaced with one another according to the type of weave or design. The warp yarns are those which run longitudinally along the length of the fabric and the weft yarns are those that run transversely across the fabric. For the sake of convenience the warp yarns are termed as ends and the weft as picks or fillings explains Gokarneshan (2004).

2.2.1 Plain weave

The most common and tightest of weave structures in which the filling yarns pass over and under successive warp yarns in the following row. Producing a checked surface reveals Mohadevan (2003).

2.3 Nanotechnology

Prince (2006) points out the term 'Nano' in nanotechnology comes from the Greek word 'nanos' which means 'dwarf'. The dictionary meaning of dwarf is abnormally small one nanometer is one billionth of a meter and is about one lakhs time smaller than the diameter of the human hair. According to Bhat (2009) nanotechnology is the science of the most rapidly emerging key technologies of twenty first century. Sharma (2006) evokes Nano technology means any technology done on nano meter or 10^{-9} meter scale and is derived from the Greek word 'Nano' means 'dwarf'. To explain an atom is 1/5nm in diameter and 100,000nm times smaller than bacteria so, it is all about generating new solutions based on atomic and molecule scale. Nano technology has been gaining momentum during the past decade. It has made a significant contribution in the textile arena. It deals with the science and

technology at dimensions of roughly 1 to 100 nanometers, although 100 nanometers is the practically attainable dimension for textile products and applications at present Hoon Joo et al (2005). Nano particles have been applied to textile materials with the objective of producing finished fabrics with varied functional performances. Nanotechnology makes textile fibers dirt-repellent. Tiny fibers measuring less than 100 nano meters in the fabric produce a self-cleaning effect. In nano finishes the surfaces of the fabric is coated with billions of these nano particles, so they are close together that even a speck of dust wouldn't fit between them. Between a particle of dirt and the surface of the textile fabric, a layer of air is formed on which the impurities 'hover' and can simply be washed off with water. Even stubborn dirt is then easy to remove. The nano coating has so far been applied mainly to engineering textiles, such as fabrics for tents, awnings or sunshades. Besides, materials used as work clothing and home textiles will also benefit by this new technology in future. Nano finishes are processes wherein nano particles of metallic origin are synthesized and then applied onto textile substrate to get the desired functional properties to suit various end uses affirms Gokarneshan et al (2012).

2.3.1 Preparation of nano particles

2.3.1.1 Nanoencapsulation

Nanoencapsulation, is a new technique which is rapidly emerging and widely used in Pharmaceutical, chemical, cosmetics, food processing and in recent years to textile finishing reveals Rajanderan (2012). Nanoencapsulation is defined as a technology of packaging solids, liquids or gaseous materials in miniature, sealed capsules that can release their contents at controlled rates under specific conditions. These capsules protect the encapsulated product from the light and oxygen and consequently prevent its degradation says Desai (2005). The use of natural material in Nanoencapsulation is one of the recent methods used to increase the durability of textile materials as compared to conventional techniques. In this technique the active compounds are encapsulated using a wall material like modified starch, sodium alginate, acacia gum and applied on the textile fabrics. More over the nanocapsules, greater the covering of the product and the longer the fragrance will last explain Bhala (2012). Nanoencapsulation of fragrance maintaining fresh aroma on textiles so that

material retains its freshness for longer duration due to controlled release of fragrance, which is superior to simple application of fragrance. Capsules that rupture by friction during wear give necessary fragrance under normal condition, remain intact evokes Dhandhanian (2012).

2.3.1.2 Coacervation

Coacervation involves the separation of a liquid phase of coating material from a polymeric solution followed by the coating of that phase as a uniform layer around suspended core particles. The coating is then solidified. In general, the batch-type coacervation processes consist of three steps and are carried out under continuous agitation. *Formation of a three-immiscible chemical phase* - in the first step, a three-phase system namely liquid manufacturing vehicle phase, a core material phase, and a coating material phase is formed by in situ separation technique. In the in situ separation technique, a monomer is dissolved in the liquid vehicle and is then it is subsequently polymerized at an interface. *Deposition of the liquid polymer coating* around the core material is accomplished by controlled physical mixing of the coating material and the core material in the manufacturing chamber during the liquid phase; this sorption phenomenon is prerequisite for the effective coating. Continuous deposition of the coating is performed by reduction in the total free interfacial energy of the system brought about by a decrease of the coating material surface area during coalescence of the liquid polymer droplets. Finally, *solidification of the coating* is achieved by thermal, cross-linking, or desolventization techniques thus forms a self-sustaining nanocapsule. The nanocapsules are usually collected by filtration or centrifugation, which is then washed with an appropriate solvent and subsequently dried by standard techniques such as spray- or fluidized-bed drying to yield free-flowing, discrete particles reveals Goud (2005).

2.3.1.3 Spray drying method

In spray drying, a liquid slurry or low viscosity paste is converted into a free flowing powder in one unit operation. The liquid feed is pumped through a nozzle, where it is dispersed into fine droplets. In the drying chamber, hot air promotes heat transfer forming dry particles simultaneously. The resulting particles are separated

into a collection vessel. A bag filter system is used to prevent the fine particles escaping to the atmosphere. The spray drying process consists of three fundamental stages. The first stage is atomization of liquid feed into fine droplets. In the second stage, spray droplets encounter the heated gas stream and evaporation of liquid from droplet occurs, resulting in the final dried nano particles. The final stage involves separation of the dried powder from the gas stream and recovery of the particles in the collection vessel profound Celik and Wendel, (2006).

2.3.1.4 Emulsion polymerization

Emulsion polymerization is one of the fastest methods for nano particle preparation and is readily scalable. The method is classified into two categories, based on the use of an organic or aqueous medium. The continuous organic phase methodology involves the dispersion of monomer into an emulsion or inverse microemulsion, or into a material in which the monomer is not soluble (nonsolvent). Polyacrylamide nanospheres were produced by this method. As one of the first methods for production of nano particles, surfactants or protective soluble polymers were used to prevent aggregation in the early stages of polymerization . This procedure has become less important, because it requires toxic organic solvents, surfactants, monomers and initiator, which are subsequently eliminated from the obtained nano particles States Reis (2006)

2.3.2 Advantages of Nanotechnology

In some typical textile finishing applications, nano particles substantially alter surface properties and also confer different functions to the materials. The nano size particles offer a larger surface area compared to bigger particles. Being in the nanoscale range, the particles are transparent. So they do not blur color or alter brightness of textile substrates reveals patel (2008). Nano finishes hold the clear advantage over their conventional counter parts, with regard to improvement in specific properties while retaining the other properties and also durability. Functional properties are useful in so many applications, such as medical, UV protection; air filtration etc reveals Gokarneshan (2012). Nano technology also has real commercial potential for the textile industry. This is mainly due to the fact that conventional

methods are used to impart different properties to fabrics which often do not lead to permanent effects, and will lose their functions after laundering or wearing says Vijayalakshmi (2010). Nano technology can provide high durability for fabrics, because Nano particles have a large surface area-to-volume ratio and high surface energy, thus presenting better affinity for fabrics and leading to increased durability. In the conventional finishing process, the properties imparted by the finishing treatments affect the physico-mechanical and comfort properties of fabrics. The main drawback of the existing system is the durability. The Nano finishing increases the durability without affecting comfort properties explains Rajendran (2009).

2.4 Textile Finishing

Finishing is defined as anything that is done to fiber, yarn or fabric to change its appearance or performance. The finishing often determines the fabric care required. Finishing alters the surface of a fabric and therefore its look and feel. Fabric and garments generally have to be finished to make the material presentable and attractive. It is often the finish which increases the sale value of textile goods Dantyagi (2008). Finishing is at the heart of wet processing of garments. Finishing is done to modify the appearance; hand and texture of the fabric. The textile finishes changes the surface appearance or texture, add a design feature design feature or alter the body of the fabric profound Shetty (2007). Finishing completes the fabric's performance and gives it special functional properties including the final Touch; say Schindler and Hauser (2004). Gupta (2007) states a key issue to be considered in any finishing treatment is the durability to washing of the functional treatment. Temporary finishes are good only for disposable articles. For all other applications, the finish should be reasonably resistant to washing.

2.4.1 Requirements of finishing

Durability to multiple laundering and dry cleaning, and no toxic to wearer

Acceptable moisture transfer properties.

Compatibility with dyes, auxiliaries and other finishing agents, should not affect the fastness properties of dyes.

Ready availability at reasonable price tells Parthiban (2012).

2.4.2 Classification of finishing

Textile finishes and finishing are classified in several ways. Persons concerned with end products (designers, merchandisers and sales personnel) usually categorize finishes as **aesthetic finishes** and **functional finishes**. The former modify the appearance and/or hand (feel) of fabrics, while the latter improve the performance of a fabric under specific end use condition describes Priyanka (2007). **Finishing can be also subdivided into two different areas such as Herbal finishing and chemical finishing.**

2.4.3 Aesthetic finishing

Aesthetic finishes are finishes used to modify the appearance or hand of a fiber or fabric. They can alter the texture, luster, or drape of a textile material. Mechanical and chemical processes may be used to impart an aesthetic finish, this type of finishing with a greater emphasis being placed on mechanical processes. Many different chemicals and processes are used in the finishing of textile material profound Fouda (2011)

2.4.4 Functional finishes

Functional finishes or special purpose finishes are applied to textile products to enhance its performance in a specific area. Although these finishes do not alter the appearance of textiles they do address some consumer problem or make the textile substrate suitable for a specific purpose points out Ammayappan. The importance for functional finishes has been increasing rapidly in the textile market because of competition, gaining added values and increasing market share. The consumers' demand are not only defined by aesthetic properties; but also their functional properties Affirms Sudha(2005).

2.4.5 Chemical finishing

Schindler (2000) suggests chemical finishing or wet finishing involves the addition of chemicals to textiles to achieve a desired result. Physical properties such as dimensional stability and chemical properties such as flame retardancy can be

improved with chemical finishing. Typically the appearance of the textile is unchanged after chemical finishing

2.4.6 Herbal finishing

Researches on plant materials are finishing agents has been initiated in the area of where the consumers face the problems by common microbes and insects causing cross infections. Natural finishing agents are non toxic, non allergenic and don't cause the problems of microbial resistance reveal Gupta (2007).

2.5 Special Finishes

2.5.1 Antimicrobial finishing

Health and hygiene are the primary requirements for human beings to live comfortably and work with maximum efficiency to protect the mankind from pathogens and to avoid cross infection. A special finish has become necessary in selecting the active substances for hygienic finishing. It must be ensured that these substances are not only permanently effective, but also compatible with the skin reveals Thilagavathy (2007). Dastjerdi (2010) tells Textiles can provide a suitable material for micro organism to grow especially at appropriate humidity and temperature in contact to human body. Recently, increasing public concern about hygiene has been driving many investigations for anti microbial modification of textiles. The herbal antimicrobial finishes overcome the disadvantages of chemical finishes. They are eco-friendly, non-toxic, non allergic and, since naturally occurring herbs are used, the cost factor is also feasible speaks Thiry (2005).

2.5.2 Importance of antimicrobial finishing

People are now increasingly aware of hygienic lifestyle, and there is a necessity and expectation for a wide range of textile products finished with antimicrobial properties. Many commercial antimicrobial agents are effective, but they are not compatible to skin and the environment. So, the herbal products can be used for antimicrobial finishes since there is a tremendous source of medicinal plants with antimicrobial composition to be the effective candidates in bringing out herbal textiles explains Krishnaveni (2011). The inherent properties of the textile fibres

provide room for the growth of micro-organisms. The increasing awareness for hygienic lifestyle, effects of global warming are raising necessity and expectation in consumers for a wide range of textile products finished with antimicrobial properties, UV protection, stain release etc. In addition, the structure of the substrates, the chemical processes may also induce the growth of microbes. Humid and warm environment still aggravate the problem. Infestation by microbes cause cross infection by pathogens and development odor where the fabric is worn next to skin. The staining and loss of the performance properties of textile substrates are the results of microbial attack says Vijayalakshmi et.al (2012).

2.5.3 Fragrance finishing

Fragrance finishing is the process which enhances the value of product by adding some scents to the textile material. Fragrance infused textile materials have wide acceptable among consumers. These kinds of fabrics are also called aromatherapy textiles. These materials, apart from giving freshness also give medical value like relieving stress, allaying fear, and antimicrobial property tells Madhu (2012). According to Joeph (2007) the world of fragrance is highly varied and fascinating of about 1800 plant species in India, about 1500 plants are which produce aromatic essential oil in one or another plant organ may be root, leaves, flowers and sometimes bark or wood. In Some cases, whole plant is used as aromatic agents.

2.5.4 Importance of fragrance finishing

Fragrance finish prevents the fabric from body odor after long use. It makes the garment as well as environment fresh. Apart from fragrance it also imparts softness to the fabric delivers Menezes (2007). Fragrance finishing provides potential benefits to the consumer through promoting a feeling of comfort and wellbeing. Different fragrances are used to stimulate different moods like relaxing, encouraging sleep. Clear thinking and confidence building by using fragrance to formal business wear says Sasikala (2012).

2.5.5 Mosquito repellent finishing

Mosquitoes are causing most of the dreadful diseases in the world such as malaria, filarial, dengue. Only few state alternatives are provided to counteract this problem it becomes imperative for the development of such fabric points out Gopalakrishnan. According to Banupriya and Maheswari (2013) Textiles have always played a central role in the evolution of human culture by being at the forefront of both technological and artistic developments. Herbs can be defined generally in commerce as a plant, plant part, or extract therefore used for flavor, fragrance, or medicinal purpose. An insect repellent help prevent and control the outbreak of insect-borne diseases such as malaria, and dengue fever. Most plants contain compounds that are used in preventing attack from phytophagous insects. These chemicals fall in to several categories, including repellents, feeding deterrents, toxins, and growth regulators “Natural” smelling repellents are preferred because plants are perceived as a safe and trusted means of mosquito bite prevention.

2.5.6 Importance of mosquito repellent finishing

Mosquitoes are members of the family of nematocericid flies. In particular, many species of female mosquitoes are blood-sucking pests and dangerous vectors of diseases. Over 3,500 species of mosquitoes have already been described from various parts of the world. Some mosquitoes that bite humans are vectors for a number of infectious diseases affecting millions of people per year reveals Masthan (2012). Mosquitoes home in on people because they give off carbon dioxide, lactic acid, body odor and heat. A mosquito repellent textile protects the human beings from the bite of mosquitoes and thereby promising safety from the diseases like malarial fever. There are many natural plant products, which show mosquito repellent properties. Extracts from roots, stem, leaves, flowers, fruits and seeds of diverse species of plants exhibit mosquito repellent properties says Anitha, (www.elixirjournal.org).

2.6 Herbs

2.6.1 *Eucalyptus globules* (Eucalyptus)

The word Eucalyptus has been derived from the Greek words 'eu' and 'kalypto', which means 'well' and 'covered'. There are near about 500 species of Eucalyptus plant, which bear long narrow blue-green leaves along with creamy white flowers and smooth pale bark. Eucalyptus leaves contain tannins, quercetin glycosides, flavonoids and volatile oils. The active ingredient in the eucalyptus leaf, a chemical called eucalyptol, is believed to be effective both in treating respiratory problems and, topical antiseptic because of its antibacterial action. [Www.sweetadditions.net](http://www.sweetadditions.net). *Eucalyptus leaves are* fragrant, mostly ovate-lanceolate. Eucalyptus leaves has been used as a simple in and useful disinfectant, for purifying the air of the sick room, for example, the extract of the fresh leaves, suitably diluted, can also be employed as a disinfectant lotion in skin diseases. The eucalyptus has insect repellent, acaricida, and pediculicidal effect reveals William (2002).

2.6.2 Indian Sarsaparilla

Indian Sarsaparilla (*Hemidesmus indicus*) is a species of plant that is found in South Asia. It is a slender, laticiferous, twining, sometimes prostrate or semi-erect shrub. Roots are woody and aromatic. It is long, tortuous, rigid, cylindrical, and slightly branched, consisting of aligneous centre, a brownish corky bark, furrowed with annular cracks. Chemicals in sarsaparilla might help decrease joint pain and itching, and might also reduce bacteria. Other chemicals might combat pain and swelling. (www.webmd.com)/.

2.6.3. Sandal wood

Sandal wood (*Santalum album*) belongs to Santalaceae family. The term sandal wood, in the world market, is frequently used for a variety of woods that yield oils similar in smell to that of the East Indian sandal wood which is the true sandal wood explains Sharia(2007). Sandal wood oil is used primarily in perfumery because of its outstanding fixative properties delivers Samuel (2007). The term sandalwood has been applied at various times to oils from several different sources. Today, almost all the sandalwood oil traded internationally is so-called East Indian sandalwood oil

distilled from the heartwood and roots of *Santalum album*. Australian sandalwood oil from *S. spicatum*. Sandalwood oil has a characteristic sweet, woody odour which is widely employed in the fragrance industry, but more particularly in the higher-priced perfumes.

2.7 Home Textile

Textiles used in a domestic environment, interior decoration, upholstery, furniture, carpeting, protection against the sun, cushion materials, floor and wall coverings, textile reinforced structures or fittings are called as hometech, growth of hometech is significant as the volume utilized is very large for this sector. Some of the other applications are curtains, mattress, wall papers, blanket, kitchen aprons, and pillow case. Coating and lamination is required to insert certain performance properties. (Technical textile conference, 2010)