

Application of Chemical Techniques in the Manufacture of Some Industrial Dental Materials

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Abstract

This method of manufacturing Separating Medium was used in the field of chemical polymerization, in which a semi-gelatinous liquid was placed on the dental kits to prevent the adhesion of the gypsum material to the dermis made of hot processed polymer. After the experiments on the plant seeds, specifically the flax plant, the final extraction of the substance has been reached. It has given all the desired good specifications that are used in the field of dentistry. It is known that this material is a polar compound was diluted with distilled water after preparation. It is worth mentioning that 10% of the industrial pigments have been added to give them the red or pink color as these colors are desirable and common in the commercial markets as well as It is recommended for the dental products manufacturers, as well as 10% of the original alcohol and 1% of formalin to prevent the growth of bacteria and other types of microorganisms that cause rotting and decomposition of the manufactured material.

Keyword: *Superating Medium, Chemical Techniques, Extractions.*

Introduction

It is important to know the importance of polymers in our daily lives and the extent of their applications in all areas in the individual, as well as their importance in many fields of industrial and medical. Doctors are not familiar with a variety of polymer materials. The use of polymers in the field of dentistry in many of the scientific experiments conducted by the researchers, by selecting the choice of dental adhesive and other materials of the other teeth, including the manufacture and production of the insulating material between the layers of plaster and acrylic work stage dental mold synthesis. It is possible to make this choice, more specifically, if we can clarify the mechanical, characteristics of various dental adhesives. The main objective is to establish strong bonds for remaining age and for composite white fillings, which are usually some other polymers. They resemble self-etch adhesives in composition as they contain acidic monomers⁽¹⁾, and are characterized by chemical interaction with dentin hydroxyapatite^(2,3).

Linum usitatissimum belongs to the Linaceae family, an important flowering plant grown all over the world. Although this species consists of more than 100 species, *L. usitatissimum* has long been considered a valuable agricultural plant due to the production of oils And other synthetic and medical products . Traditionally, flax products and compounds have been prescribed to treat many chronic human diseases such as diabetes, high cholesterol, cardiovascular disease and other related conditions . There are two types of flax (flax fiber and flax seed) which are widely used nowadays. A significant trend has been observed in reducing the area of flaxseed in favor of flaxseed in some countries in recent years and because of the ever-increasing importance of flax as a plant used in many chemical, pharmaceutical, food and animal feed industries. Oilseed crops ⁽⁴⁾. Flaxseeds are used as a diet and a preventive enhancer, and have been used for a long time in both gastrointestinal diseases (constipation, inflammation of the bowel, colon, gastritis) and respiratory diseases (cough and dyspnea). This type of plant has also been used in the industry, because its seeds contain a high percentage of organic fibers which made it used in the manufacture of paper, ink, cloth and fishing nets, as well as in the manufacture of soap and oils that Working on hair ⁽⁵⁾. A separate medium is defined as representing

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a coating layer formed on a surface that prevents the second surface from sticking to the first surface ⁽⁶⁾. This layer is a medium that rises above the surface of the material such as the plaster, metal or wax to prevent adhesion between the denture and other materials that are in contact with him during preparation ⁽⁷⁾. And also used to seal all the pores in the stone model without adding any additional materials ⁽⁸⁾. Separating media are materials that used for filling any porous surface in order to effect easy separation of other materials which are later poured against them. Therefore the acrylic resin must be carefully protected during processing from the gypsum surface in the mould spaces for two reasons: 1-Any water incorporate in to the resin from the gypsum during processing will defined affect the polymerization rate and the cold of the resin: the denture procedure will craze readily of water after the processing: particularly if the resin is not cross-linked. 2-Dissolved polymer and free monomer must be prevented from soaking in to the investing medium, portions of gypsum material will be joined to the denture after polymerization: with result that it will be virtually impossible to separate the investing material from the resin ⁽⁹⁾.

Application

Materials and Method

The amount of 100 grams of flax seed is taken and the quantity is boiled in 5 liters of distilled water and 100 degrees Celsius. The boiling process lasts from half an hour to an hour. The longer the boiling period, the more the solution becomes somewhat thick or semi-gelatin, The mixture is heated through sieves for a liquid that is seed free and free from impurities, and then leaves the solution to cool down. After that, the amount of formalin and 1% of the solution is added to the solution and 10% of the ethyl alcohol is added to prevent the growth of microorganisms from bacteria, fungus and others. Then we put (0.001) of the red industrial pigments and mix the solution well in order to homogenize to obtain a liquid substance that is similar in specifications, shape and work to the insulating material. And add varying proportions of polymer solution suitable for use as a mixture to give a liquid or gelatin to meet the required specifications that lead to the purpose we are looking for. After the manufacture of the material, a sample of hot acrylic was prepared. Using the usual plastic technique, 3ml of the insulating material, using a small brush, was placed on the plaster containing the gypsum material (prepared by the dental kit). Then the acrylic sample was placed and

pressed with 30 pascal. (15-60 °C). After the cooling process, the mold was opened and it was observed that the acrylic material was not attached to the stone material. Their success and efficiency It is known that flaxseeds are available in the market, cheap and easy to prepare, and the possibility of storage for a long time without decomposition, used in this research is a natural plant material gives good results in the separation of gypsum material from the kit The teeth are made of acrylic, and have no negative effects on the mechanism of the work of dental molds . Through the preparation of the mold, and the traditional technique follows its steps, the bottom of the tooth flask is filled with a dental stone according to the manufacturer's instructions: W / P is 25ml / 100g; a layer of stone mixture is placed on the metal mass to avoid air retention. Insert the metal block into the stone mixture after coating with separate media. It is known that after the stone was laid, both stone and metal patterns were coated with separate media. The top half of the flask is placed at the top of the bottom part and the stone is packed, and with continuous stirring, to get rid of the trapped air. The stone was allowed to harden for 60 minutes before opening the flask. Then the bottle and the metal are opened. The patterns are removed from the mold carefully and carefully. The material is then wiped with a soft brush.

Results and Discussion

Polymers are materials made from long, repetitive chains of molecules. These materials have unique properties, depending on the type and how they interconnect. The purpose of the extraction phase is to obtain the desired component and leave the unwanted components aside, which are the residues of the seeds from which the material was extracted. This extraction should be done well and sufficient to obtain a material of desirable specifications and highly efficient in the formation of the crust necessary to prevent the adhesion of gypsum material to the dentures. This extraction process is done by heating the seeds used (flax seed) with distilled water to 100 degrees Celsius The boil is then extracted from the seeds and the boiling continues from half an hour to an hour. This response to the extraction was obtained by the presence of water as a polar compound and the fact that flaxseed is a plant component, which is considered a complex carbohydrate, so it decomposes with water and by the temperature as a catalyst for the period mentioned above because these seeds are surrounded by a protective layer cannot access water easily. The normal situation. (10%, 15%,

20%, 25%). The optimum concentration of the polymer mixed with the extract was 20%, giving the desired result in the separation between the acrylic and stone. If the polymer was used alone in this separation process, it did not give the result to be obtained, as well as the extract if we used it alone. The result is not the same as after mixing. Therefore, the extract and the polymer used should be mixed with this ratio because it gives the physical and chemical that qualifies it to be usable as a buffer separating the gypsum and acrylic layers. The measurements taken are as shown in Table (1). It is not surprising that we get liquid synthetic material such as the insulation of plant seeds such as flaxseeds. Purifying the desired component of the "desired material" after its removal from the unwanted component (seed) is very important because it ultimately gives us a transparent liquid slightly tilted to a homogeneous, semi-gelatinous, polarized color that can be diluted by ordinary water. Gives the red or pink color desired when the dental laboratory owners any color of the dental kit. Pigment additives, dyes or colored materials are the basic material where the product acquires attractive colors or may act as light or oxidative protective materials and other physical and chemical properties⁽⁹⁾. After obtaining the required liquid "flaxseed extract" mixed with the polymer, the molded gypsum material is coated with a soft brush and left for at least five minutes, then the acrylic material prepared to form the tooth kit is then applied to special equipment and subjected to temperature ranging from (60 - 80) for half an hour and harden in the end. Here, after the opening of the molds, we saw that the gypsum material was not attached to the mold. This is the secret to success in the experience of manufacturing this material, which is of great benefit. However, if the insulating material is not applied, this gypsum material will stick to the denture, making it difficult to remove it, distorting the kit and not properly and accurately imprinting it in the patient's mouth, as well as transferring water molecules from the gypsum material in the mold to the dental kit during the process of sclerosis. Poor specifications and not good research. The water molecules in the kit appear in clear bubbles and this is evidence of its lack of validity. The selection of these flaxseed seeds in our current research is not random, but is done through scientific research and laboratory experiments. This is why chemical industries start with simple raw materials obtained from natural sources such as mines, forests, agricultural fields, , In addition to the most abundant material in nature which is the water that cannot be established or the duration

of any vital effectiveness without it and it is agreed that one of the most important goals of science, scientists, scientific researchers and industry workers is to harness their science creatively to develop new technology. A new material "utilized in the industrial and medical fields, and the use of raw materials improved and in most cases in developed countries find new technology protection it by registered Kpraouat invention and discoveries as the discoverers true for these materials and save their rights periods specified time by a special⁽¹⁰⁾. In this research, a comparison was also made between the insulating material extracted from the flaxseed and other good insulation materials available in the market. The Indian "ISOLATE" model was selected in comparison. The two models were used to show that the proportion of gypsum materials adhering to the dental prosthesis is very small compared to The original article. Some characteristics of both materials were measured for comparison purposes and as shown in Table (1):

The table (1): shows the comparison of the chemical properties of the insulating material (manufactured by extraction and polymers) and the Indian product (ISOLATE).

Chemical Properties	ISOLATE) Type)	Extraction Material
T.D.S	0	0
Conductivity	2.62	3.17
PH	8	6.55

However, when the table is observed, soluble salts are found to be non-existent in both substances. However, the conductivity and pH function of the Isolate insulation material is slightly higher than that of flaxseed. This little difference is not affected by the work of the insulating material in the formation of the cortex that separates the two electrodes when used. This discrepancy is shown in Figure (1):

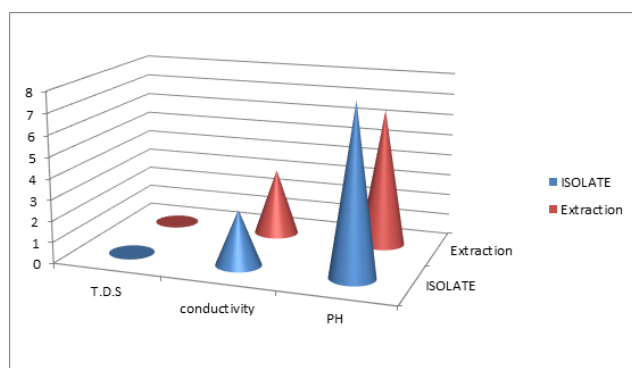


Figure (1): Shows the comparison between the Indian and the extract in terms of turbidity, conductivity and acid function, respectively.

It is known that the manufacture of separating medium, which is used in the manufacture of teeth from flax seeds, works to produce a polar compound diluted with normal and distilled water. This material creates a layer of thin crust that prevents the adhesion of gypsum material to the dentures made of hot acrylic treated. It is possible to have a separating medium with a transparent yellowish color if a distinctive dye is added to it from an industrial, not a pharmaceutical, substance.

Conclusion

The main objective of this study is to obtain local products that enrich the markets with manufactured materials inside the country and not to import foreign materials as much as possible, in order to promote the economy of the country. Therefore, the country is satisfied with this material which is reached in scientific and industrial ways and applied practically in all Laboratories and dental clinics. It is a realistic study in which plants invest, specifically flax plants, which are mixed in calculated proportions with polymer solutions. Therefore, a high quality industrial material is produced with high efficiency.

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