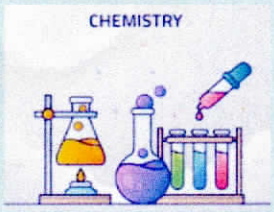



## Innovative Research:

### *Catgut Suture*

M.Sc.II Analytical Chemistry students have worked out for innovative research on Catgut Suture. The synthesis based on goat intestine as a protein cartilage source. These cords have been used for centuries by surgeons for suturing wounds. The students have used innovative DNA material and heat treatment to have a desirable strength for knotting process. It was tested on rabbit for wound healing by observing inflammation, bleeding etc. It was found that, suture absorbed in muscles within 12 to 20 days without any complications.

On behalf of M.Sc.students, **Prof.Dr.S.D.Jadhav** registered on a Startup portal as a first Ideation stage.

### *Herbal Wines*

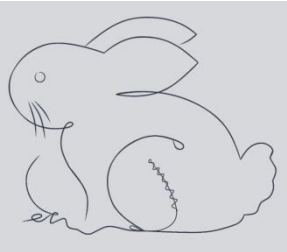
The Process of wine-making involves the harvesting the Ginger, Beetroot and Watermelon and crushing them to release the juice with yeast, blending with ingredients followed by filtering, aging and racking.Currently,Three Prototype herbal wines are ready to register for Startup.

### *Agave fiber extraction and value added products*

Agave fibers are extracted from Agave plant by retting process which requires about 10 to 15 days. They are Sun dried and combed and sheets are made to form a variety of value added products. It has been planned to design Crepe bandages for bone injury support.

Department of Chemistry

# Cat Gut Suture Trial on Rabbit Muscle: An Experimental Study



## 1 Introduction:

Surgical sutures play a critical role in wound closure and tissue healing. Cat gut sutures, made from the collagenous fibers of animal intestines, have been widely used in various surgical procedures. This report presents an experimental study that investigates the performance and efficacy of cat gut sutures on rabbit muscle, focusing on wound healing, biocompatibility, and potential complications.

## 2 Experimental Methodology:

### a. Animal Model Selection:

Rabbits were chosen as the animal model due to their similarity to humans in terms of musculoskeletal anatomy and wound healing processes.

### b. Suture Technique:

Under aseptic conditions, a standardized incision was made in the rabbit muscle. The cat gut sutures were carefully inserted into the wound using an appropriate suture technique. The incisions were then closed, ensuring adequate approximation of the wound edges.

### c. Sample Size:

An appropriate sample size was determined to ensure statistical significance and reliability of the study results. Factors such as power analysis, ethical considerations, and previous studies were taken into account in determining the sample size.

### d. Observation Period:

The rabbits were closely monitored throughout the observation period, which typically included regular check-ups and assessments of the wound healing process. Parameters such as wound closure, inflammation, infection, and suture retention were evaluated.

## 3. Evaluation Parameters:

**a. Wound Healing:**

The primary parameter assessed was the overall wound healing process. This included the evaluation of wound closure, such as the presence of wound dehiscence, delayed healing, or infection.

**b. Biocompatibility:**

The compatibility of cat gut sutures with rabbit muscle tissue was evaluated. Any signs of tissue irritation, inflammation, or foreign body reaction were observed and documented.

**c. Suture Retention:**

The ability of cat gut sutures to maintain wound closure strength over time was assessed. The rate of suture degradation and any instances of suture breakage or loosening were recorded.

**d. Complications:**

Any complications or adverse effects associated with the use of cat gut sutures, such as infection, abscess formation, or excessive scarring, were documented.

## 4 Results and Discussion:

The results obtained from the experimental study should be presented, highlighting the key findings and their implications. This section may include the following:

### a. Wound Healing:

Detailed observations regarding wound closure, healing progression, and any complications encountered during the observation period.

### b. Biocompatibility:

Evaluation of tissue reactions, inflammation, or any adverse effects associated with cat gut sutures.

### c. Suture Retention:

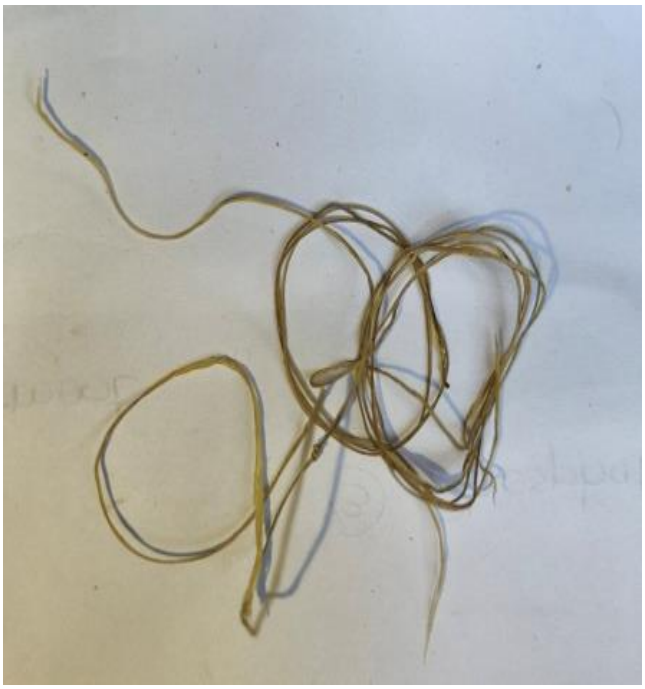
Assessment of the suture's integrity, degradation rate, and ability to maintain wound closure strength.

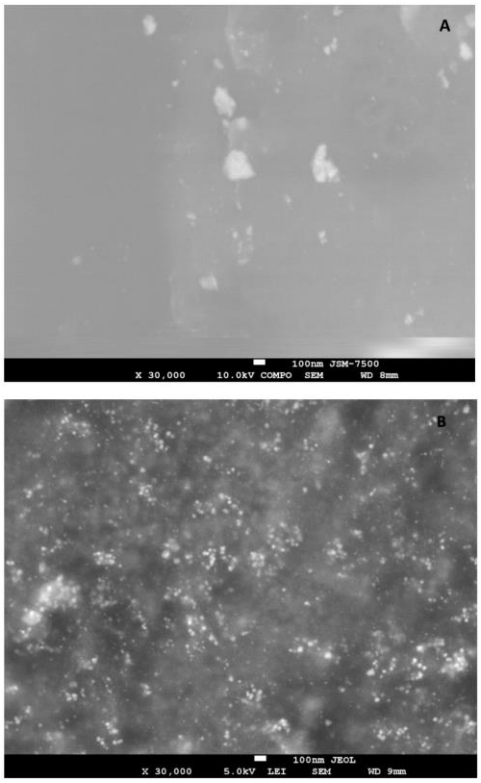
### d. Comparison with Other Suture Materials:

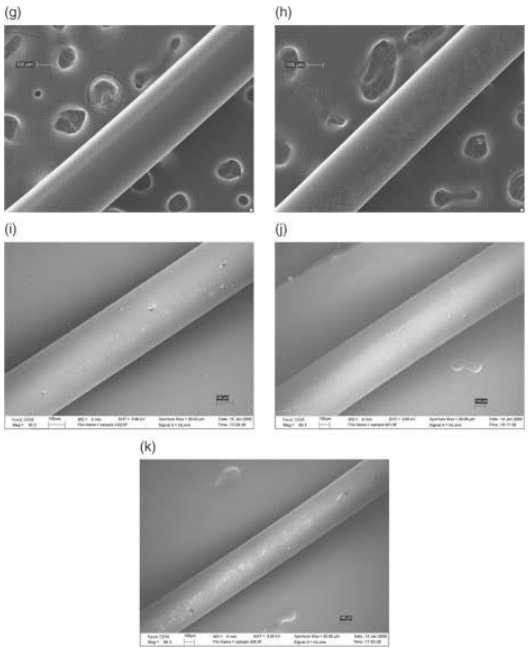
Discussion on the advantages and disadvantages of cat gut sutures compared to other commonly used suture materials in terms of wound healing and biocompatibility.

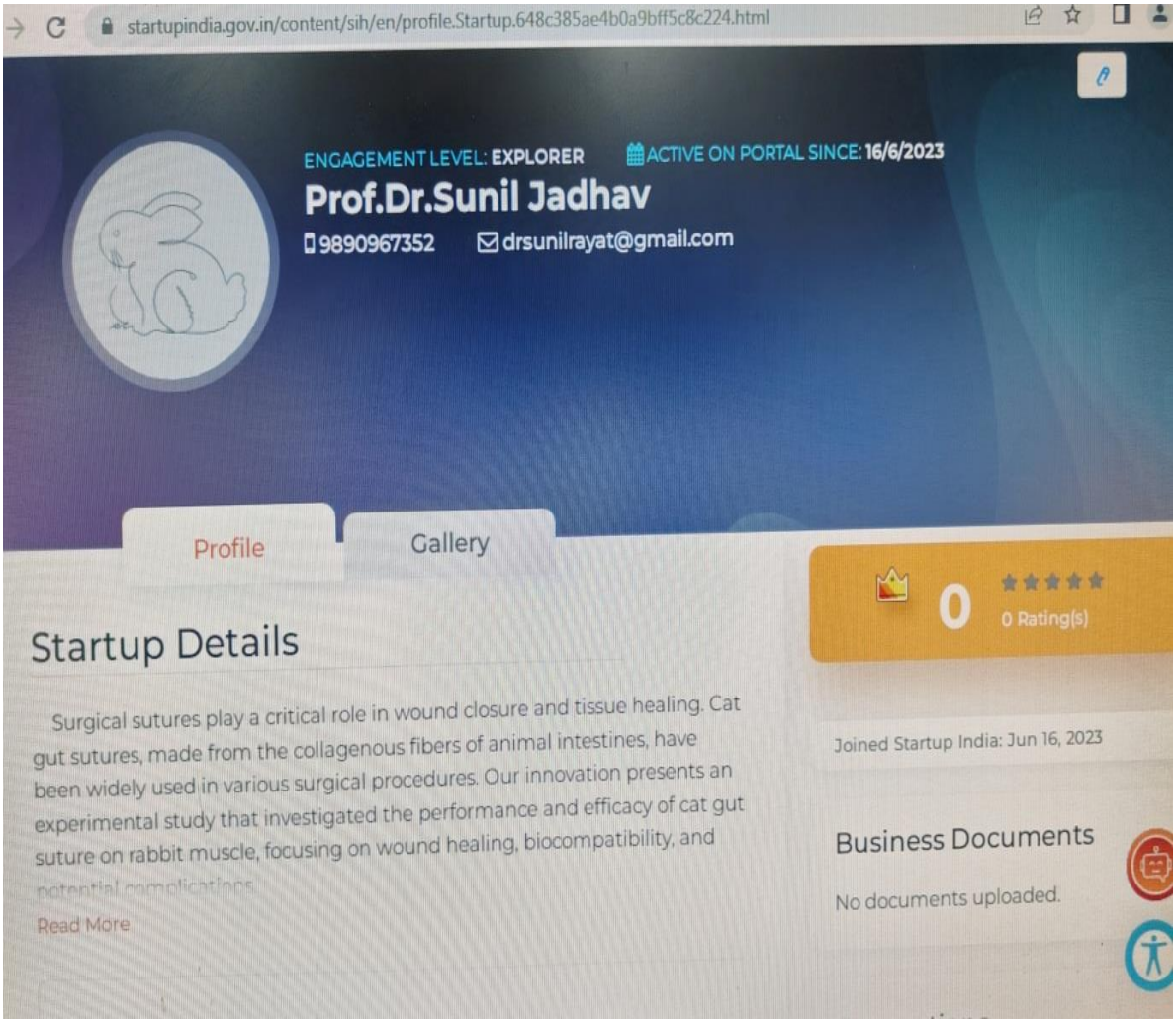
## 5. Conclusion

The conclusion section should summarize the findings of the study and their implications. It should address the efficacy, biocompatibility, and potential complications associated with the use of cat gut sutures on rabbit muscle. Recommendations for future studies or improvements in suturing techniques can also be mentioned.




A
100nm JSM-7500
X 30,000 10.0kV COMPO SEM WD 8mm
B
100nm JEOL
X 30,000 5.0kV LEI SEM WD 9mm


(g)
(h)
(i)
(j)
(k)


startupindia.gov.in/content/sih/en/profile.Startup.648c385ae4b0a9bff5c8c224.html
ENGAGEMENT LEVEL: EXPLORER
ACTIVE ON PORTAL SINCE: 16/6/2023
Prof.Dr.Sunil Jadhav
9890967352
drsunilrayat@gmail.com
Profile
Gallery
0
0 Rating(s)
Startup Details
Surgical sutures play a critical role in wound closure and tissue healing. Cat gut sutures, made from the collagenous fibers of animal intestines, have been widely used in various surgical procedures. Our innovation presents an experimental study that investigated the performance and efficacy of cat gut suture on rabbit muscle, focusing on wound healing, biocompatibility, and
Read More
Joined Startup India: Jun 16, 2023
Business Documents
No documents uploaded.


# Herbal Wine from Ginger, Watermelon, and Beetroot

## 1. Introduction

Herbal wines have gained popularity as alternative beverages due to their unique flavours, potential health benefits, and natural ingredients. This report presents the development process of a herbal wine using ginger, watermelon, and beetroot as key ingredients. The combination of these ingredients offers a refreshing and nutritious beverage option.

## 2. Ingredient Selection and Preparation

### a. Ginger:

Ginger was chosen for its aromatic and medicinal properties. Fresh ginger roots were selected, washed, peeled, and finely grated to extract its flavor and therapeutic compounds.

### b. Watermelon:

Watermelon, known for its high water content and natural sweetness, was included to enhance the taste profile of the herbal wine. Ripe watermelons were chosen, and the flesh was extracted, deseeded, and pureed.

### c. Beetroot:

Beetroot was selected for its vibrant color, nutritional value, and earthy flavor. Fresh beetroots were washed, peeled, and finely grated to extract their natural pigments and flavor.

## 3. Fermentation Process

### a. Ingredient Mixture:

The grated ginger, watermelon puree, and beetroot gratings were combined in a clean and sanitized container. The quantities of each ingredient can be adjusted based on personal preference and desired flavor intensity.

### b. Addition of Sugar and Yeast:

To initiate fermentation, a suitable quantity of sugar was added to the mixture. This acts as a food source for the yeast and contributes to the sweetness of the final product. A chosen strain of wine yeast was added to facilitate fermentation.

### c. Fermentation and Aging:

The container was covered with a clean cloth or fermentation lock to allow carbon dioxide to escape while preventing contamination. The mixture was left to ferment at a controlled temperature for a specific duration, typically a few weeks. After primary fermentation, the wine was transferred to a secondary vessel for aging, enhancing its flavor and complexity.

## 4. Bottling and Storage

Once fermentation and aging were complete, the herbal wine was carefully decanted, ensuring separation from any sediment. The wine was then bottled and sealed to maintain freshness. Proper storage conditions, including a cool and dark environment, were provided to preserve the wine's quality over time.

## 5. Tasting and Adjustments

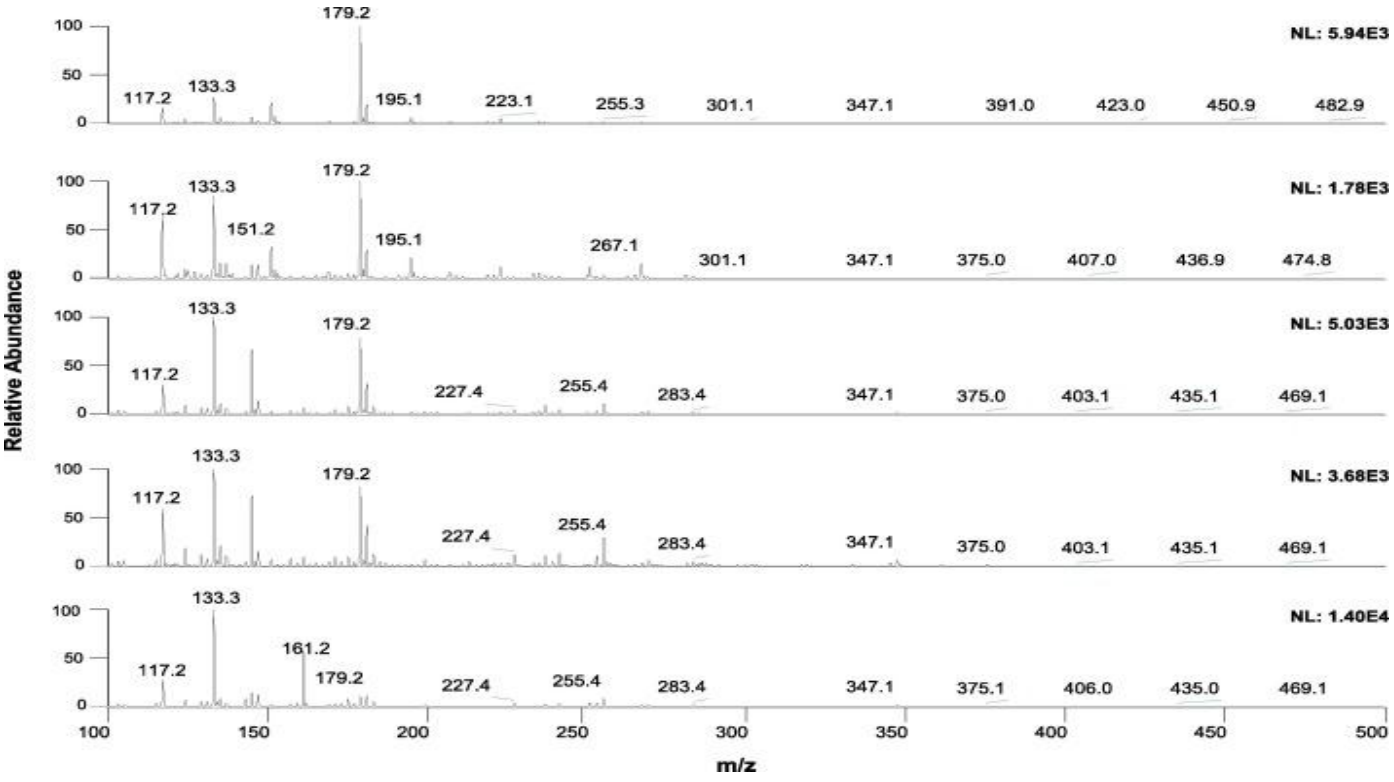
After a suitable aging period, the herbal wine was ready for tasting and evaluation. Its flavor, aroma, color, and overall balance were assessed. Adjustments, such as adding sweeteners or adjusting the acidity, could be made to achieve the desired taste profile.

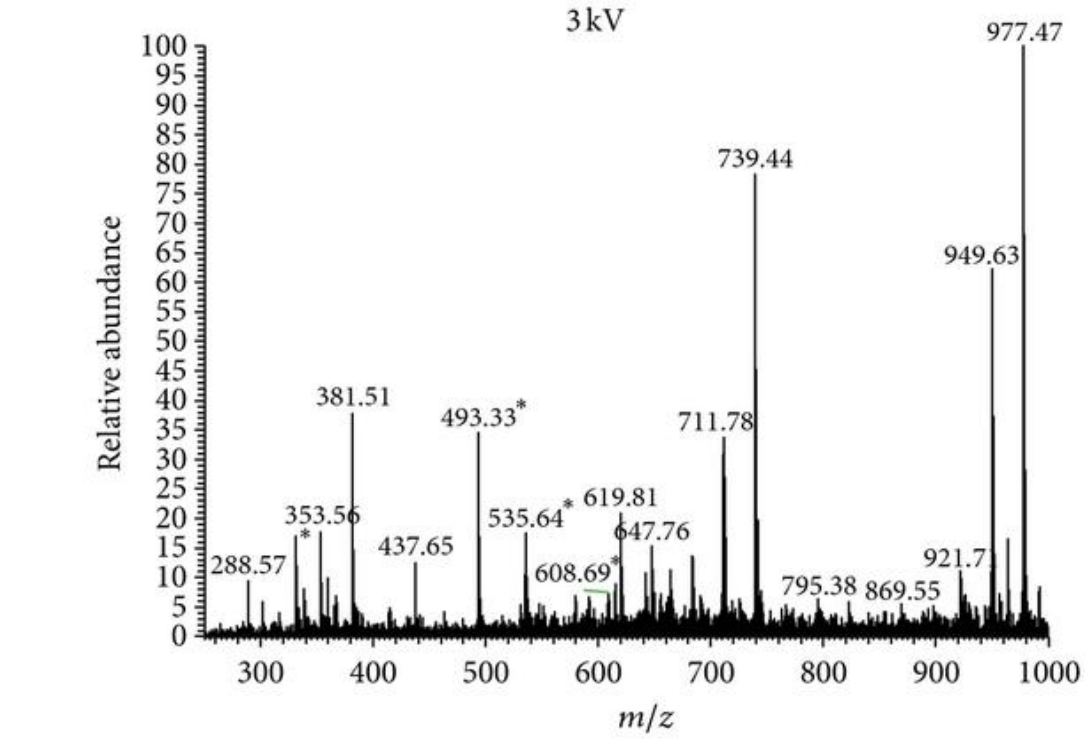
## 6. Health Considerations and Consumption

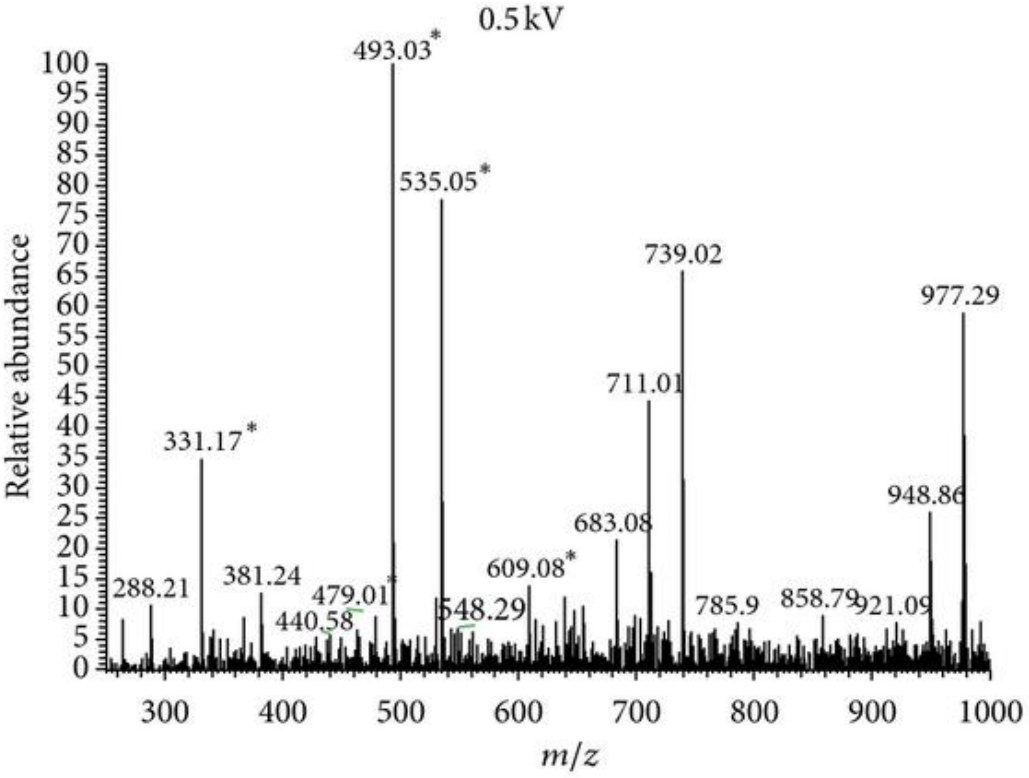
It is important to note that herbal wines, including the ginger-watermelon-beetroot wine, may have potential health benefits but should be consumed in moderation. The alcohol content of the wine should be taken into consideration, and individuals with specific health conditions or dietary restrictions should consult a healthcare professional before consumption.

## 7. Conclusion

The development of a herbal wine combining ginger, watermelon, and beetroot offers a unique and flavorful beverage option. The fermentation process, along with careful ingredient selection and preparation, contributes to the creation of a refreshing and nutritious drink. Further exploration and experimentation can be conducted to refine the recipe and adapt it to personal preferences.




3 kV
Relative abundance
m/z
977.47
739.44
949.63
381.51
493.33*
711.78
619.81
353.56*
535.64*
647.76
437.65
921.7
288.57
608.69*
795.38
869.55


0.5 kV
Relative abundance
m/z
493.03*
535.05*
739.02
977.29
711.01
331.17*
948.86
683.08
609.08*
381.24
288.21
479.01*
548.29
785.9
858.79
921.09
440.58


# "Agave fiber Extraction: Enzymatic Retting"

Enzymatic retting is the process in which the pectin materials surrounding the fiber bundles are degraded by industrially produced enzymes. Enzymatic retting is faster than natural fermentation retting and results into softer fibers. It has the potential to simplify and reduce fiber extraction costs. Enzymatic retting is expected to offer greater process control, increased fiber yield and shorter processing time. Enzyme solution used in retting can be recycled several times, which makes the process eco-friendly and cost effective

Pectinases and xylanases are the enzymes which can be used for retting plant portions for fiber release.

## Experimental:

The plant material after harvesting, spines are removed by proper care and submerged into water for minimum15-20 days for retting. Then it was hammered to separate fiber which are combed and Sun dried for 3 days and used for value addition products like Cap, Bags and medical bandage strips.


GPS Map Camera
Koregaon, Maharashtra, India
4, Koregaon-Rahimatpur Rd, Koregaon, Maharashtra 415501, India
Lat 17.68612°
Long 74.174646°
17/03/23 11:46 AM GMT +05:30
Google