**CATEGORY :**
**HUMANITIES**

# CONCERN FOR HEMOGLOBIN AMONG STUDENTS : A MEANS TO BETTER LIFE

**LEVEL: UG**

## ABSTRACT:

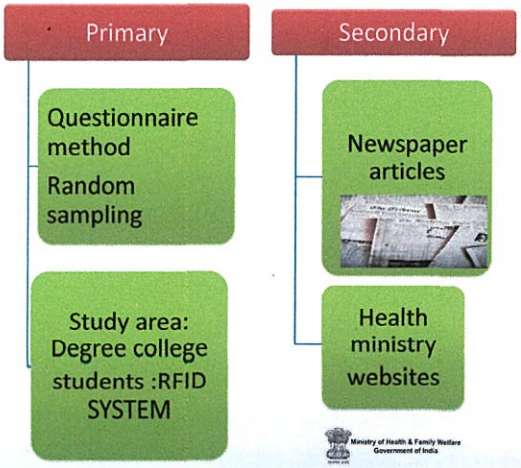
**Hemoglobin is an essential part of our blood though is often ignored by many students. Hence an inappropriate level of hemoglobin affects the mental and physical health of the students thus affecting their studies . Hence our study is an attempt at the micro level to understand the problem of hemoglobin among the degree college students and to understand the association with their :**

a) **Income**
b) **Ability to focus and concentrate on studies**

## OBJECTIVES:

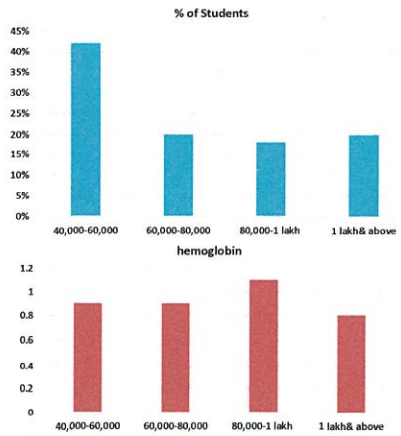
- To study the awareness of hemoglobin among students
- To observe the effect of income level on hemoglobin
- To understand the effect of hemoglobin on concentration skills
- To examine the eating habits of the students
- To recommend measures AFFORDABLE FOR STUDENTS

## METHODOLOGY:

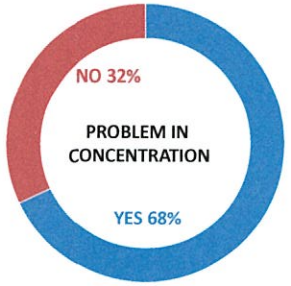



**Data analysis – Descriptive statistics**

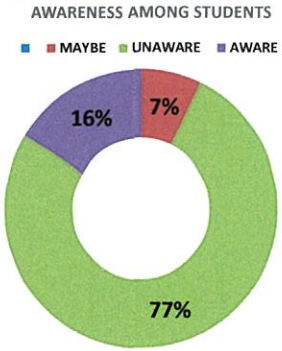
## Observation No. 2 & 3




## 175 PARTICIPANTS




## Observation No. 1

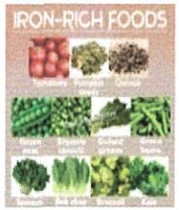



## Observation No. 5

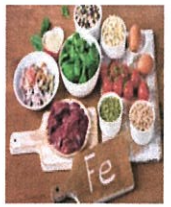
**Hemoglobin is a combination of Iron + Protein**

**VEG/NONVEG**

CHIKKI, GREEN LEAFY VEGETABLES, GREENBEANS, JAGGERY, BLACK EYED BEANS, KIDNRY BEANS,BEETROOT/ EGG, FISH, MEAT








Certified as TRUE COPY

Principal
Ramniranjan Jhunjhunwala College,
Ghatkopar (W), Mumbai-400086.

## CONCLUSION

- Problem is seen in all income groups
- Concentration of students is affected
- Poor eating habits affects the hemoglobin level
- Less awareness

## SUGGESTION

- College canteen should provide iron rich food
- Frequent hemoglobin camps in colleges should be initiated
- Awareness about the cheaper means of iron rich products

## BIBILIOGRAPHY

https://www.ncbi.nlm.nih.gov/pubmed/11243085
https://hetv.org/pdf/anaemia-policy.pdf

# Toilet-The Pivotal Necessity of Hygienic India *w.r.t. North East Mumbai*


## ABSTRACT:

***Swachh Bharat Abhiyan (SBA) is a national level Cleanliness Campaign launched on 02 October 2014 to make India clean by the year 2019 fulfilling the dream of Mahatma Gandhi' स्वच्छ भारत, स्वस्थभारत'. One of the major objectives of the campaign is to eliminate open defecation. The paper is an attempt to highlight the sanitation problems from women's perspective in the selected area of study and to understand the situation of open defecation -its problems and impacts.. The paper concludes by suggesting the ways in which India can be declared free of open defecation and the dream of Swachh Bharat Abhiyan can be realized with active participation of all the stakeholders and women in particular.***



***Keywords:***

**Swachh Bharat Abhiyan, open defecation, toilets, sanitation, cleanliness, dignity of women.**


## OBJECTIVES

- To understand aims of SBA.
- To focus on issues relating to sanitation w.r.to women.
- To understand the health problems related to open defecation.
- To suggest solutions for proper implementation of SBA.

## SCOPE

The study was undertaken to understand the sanitation issues with reference to toilets (Personal, Community and Public), knowing the problems faced by the residents in a select suburb of North East Mumbai.

## RESEARCH METHODOLOGY

- Primary Data: Responses obtained through informal interaction.
- Secondary Data: Collected from websites and books.

## CONCLUSION AND SUGGESTION

- SBA has met with limited success.
- No proper implementation and follow up of the same.
- Beneficiaries are unaware about the grants given by the government to built toilets.
- Lack of Awareness
- Increase number of community toilets.
- More focus on community toilets in slums.
- Maintaining Cleanliness.
- Creating Awareness.
- Participation of citizens

## DATA ANALYSIS/ RESULTS

Table 1: Distribution of respondents suburbwise

| Name of the suburb | No of respondents |
|---|---|
| Ghatkopar | 103 |
| Vikhroli | 57 |
| Bhandup | 40 |
| **Total** | **200** |

Fig. 1 Do you have personal toilet in your house?

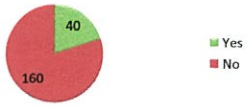
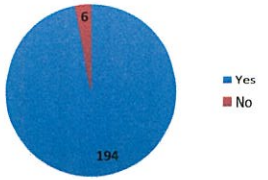



Fig.2 Do you have a community toilet



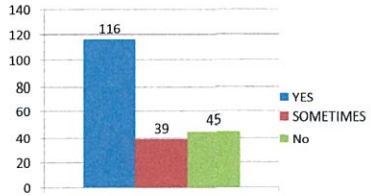




Fig.03 Is the community toilet clean?

Fig .4 Are the annual charges affordable & reasonable

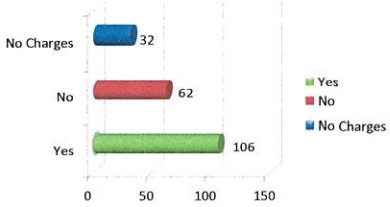
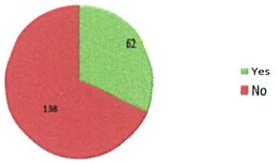



Fig.5 Are you aware about Govt. subsidy to built toilet?







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30-33

**CATEGORY**
PURE SCIENCE

# SMART PLANT MONITORING SYSTEM

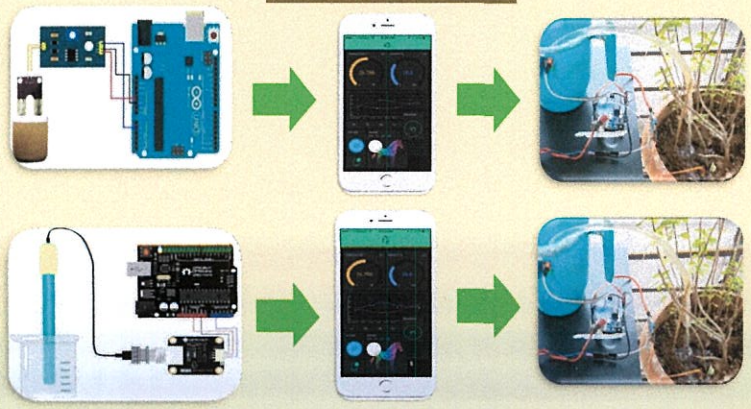
**LEVEL**
UG

## INTRODUCTION

Peoples are facing problem to watering the plants when they are away from the home because of this availability of plant nutrients also get affected. Also the plants become dry due to insufficient water. The main objective of this project is to provide a smart plant monitoring system thereby saving time and effort of the people . In traditional way the person have to give water to the plant so that it should not get dry , but in our system this work is automatically done and also our system take care about that the plant pH so that the sufficient nutrients should available to the plant. This smart plant monitoring system can be adjusted and modified according to the changing environment and provides ideal growth. This proposed work includes an embedded system for automatic control of monitoring the plant. The proper monitoring system is very important because the main reason is the due to lack of water and nutrients the plant get die and unplanned use of water result large amounts of water goes waste and the root can rot and the plant can't get enough oxygen from the soil. For this reason, we use this smart plant monitoring system, and this system is very useful in all climatic conditions.

## PROCEDURE

## AUTOMATION



## APPLICABILITY

- Automatically supply water to plant when soil moisture is less than the threshold value.
- Send the soil moisture value of the soil and send the gathered data to the Blynk App.
- Automatically supply solution to plant when pH of soil is not in defined range.
- Sense the pH value of soil and send the gathered data to the Blynk App.

## SCOPE

This project has wireless sensor network for real-time sensing of an plant. This system provides uniform and required level of water to the plant and it avoids water wastage. When the moisture level in the soil reaches below threshold value then system automatically switch ON the water pump. When the water level reaches normal level the water flow sensor automatically switch off. The sensed parameters and current status of the motor will be displayed on Blynk App. pH sensor senses the pH value of the soil sample and display the sensed value on the Blynk App. Internet of Things has provided extremely productive ways to cultivate soil with the use of cheap, easy to-install sensors and an abundance of insightful data they offer.

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**Category**
**Pure Science**

# ECOFRIENDLY CLEANSING FOR ALL

**Level: PG**


## Abstract:

Plants have the unique capability of synthesising and storing an array of fine chemicals scientifically known as secondary metabolites. These fine chemicals play an important role in plants viz. defense mechanisms, as pollinator attractants, as a metabolite channelling system to name a few. Human beings have exploited these fine chemicals to be used as agrichemicals, flavors, fragrances, pharmaceuticals etc. The United Nations Sustainable Development (UNDP) Group have identified 17 goals to be achieved by 2030. This research project aims at good personal hygiene a key to good health and sustainability by waste reduction. A eco friendly soap, hand wash and wipes formulated from residue (waste material) plant material is outcome of this research work

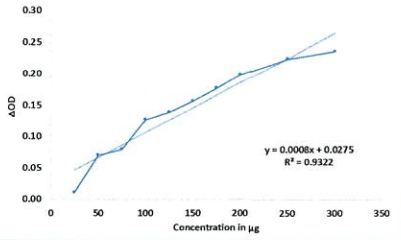

## Method of Extraction:

- 20 g plant material in 200 ml of distilled water
- Reflux at 91°C for 1 hour
- Filter through Whatman filter paper, collect the filtrate and evaporate in evaporating dish
- Use 1: 10 concentration of reconstituted material for further studies

## Agave Species

## Saponin Content:

- Standard: Quillaja bark (1mg/1ml)
- Plant material: 1:10 conc.
- Result: 0.011g of saponin/g of plant material




## Surface Density:

$$\Gamma = -\left(\frac{1}{RT}\right)\left(\frac{d\gamma}{dlnc}\right)$$

where,
- $R$ = gas constant (8.314 J mol$^{-1}$ K)
- $T$ = absolute temperature (K)
- $\gamma$ = surface tension (mN m$^{-1}$)
- $lnc$ = natural logarithm of concentration

## Area of Head Group:

$$A = \frac{1}{\Gamma N A V}$$

where,
- $\Gamma$ = surface density (nmol cm$^{-2}$)
- $N_{AV}$ = Avogardo's constant (6.022 x 10$^{23}$ mol$^{-1}$)

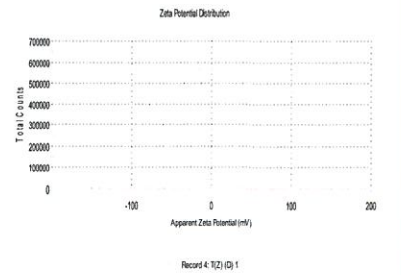
## Foam height

| Concentration (ml) | D.W | Foam height (cm) |
|---|---|---|
| 0.2 | 0.8 | 0.2 |
| 0.4 | 0.6 | 0.3 |
| 0.6 | 0.4 | 0.3 |
| 0.8 | 0.2 | 0.4 |
| 1.0 | 0.0 | 0.5 |

## Phytochemical Analysis:

| Chemical constituents | Test | Result |
|---|---|---|
| Amino acids | Ninhydrin test | + |
| Carbohydrate | Fehling's test | + |
| | Benedict's test | + |
| Coumarins | Coumarin test | + |
| Flavonoids | Sodium hydroxide test | + |
| | Ammonium hydroxide test | + |
| | Alkaline reagent test | + |
| Glycosides | Keller-Killani test | + |
| Polyphenol | Folin's ciocalteau | + |
| Proteins | Xanthoproteic test | + |
| Saponins | Foam test | + |
| Tannins | Tannin test | + |

## Zeta Potential:

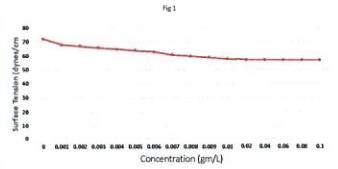



## Formulation of Hand wash (Tablet) :

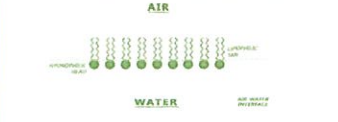
Handwash in the form of tablet which cleans with minimum water and produces zero residues.

## Surface Tension

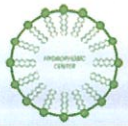
- Instrument name: Surface Tensiometer
- Plant Material: Re-consutituted plant extract
- Surface Tension of Water: 72.2 dynes/cm
- Surface Tension of Extract: 57.00 dynes/cm




*Assembly of monomers at the air-water interface. The lipophilic tail is above water, while the hydrophilic head is at the water surface*




*Aggregation of monomers into micelles once critical micelle concentration has been achieved*



## Thin Layer Chromatography:

- **Standard:** Escin (1mg/1ml)
- **Plant sample:** 0.1g in 1 ml
- **Solvent system:** chloroform: glacial acetic acid: methanol: water (60:32:12:8)
- **Spraying reagent:** Liebermann Burchard reagent
- **Colour of the spot:** yellow
- **Resolution factor:** 0.6533

## Surface Parameter

| | |
|---|---|
| Surface tension(dynes/cm) | 57 |
| Critical micelle concentration (g/L) | 0.041 |
| Surface density (nmol) | 0.13 |
| Area per head group(Å) | 125.801 |
| Zeta potential(mV) | -16.9 |
| Hydrodynamic radii (d.nm) | 400.5 |

## Formulation of Mobile wipes:

- Proportionate amount of plant material in distilled water
- Heat for 1 hour and filter the solution
- Collect the filtrate and make the volume up to 100 ml distilled water
- Add 1ml of vinegar and 10 drops of natural essential oil

## Formulation of Hand wash (Tablet) :

- Proportionate amount of plant material in distilled water
- Heat for 1 minute
- Filter through filter paper collect the filtrate
- Add cellulose and glycerin
- Add 5 to 6 drop of natural essential oil

## Need for Research:

- Health
- Water Conservation
- Waste reduction
- Wastewater will not pollute water bodies since it has natural surfactant

## Applications:

- Wellness
- Health for all through personal hygiene
- Eco friendly cleansing agent, utilizing waste as a source of surfactant
- Less water consumption and wastewater generated is biodegradable
- Replacement for SLS (Sodium Lauryl Sulphate) which is a chemical surfactant

## References: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# Inter University Research Convention Avishkar 2019- 20

# SURVIVAL OF PLANTS BY MODULATING PHOTOSYNTHETIC SYSTEMS

Project Code : R-2-15-SC-PPG-5 Category 3 / Level : PPG

## INTRODUCTION

CAM plants under severe water stress shift from CAM to a metabolic state termed CAM-idling, in which stomata are closed day and night and yet there is a continued but low, diurnal fluctuation of organic acids evidently synthesized by refixation of respiratory $CO_2$.

The $CO_2$ is fixed by enzyme PEPc, which produces malic acid stored in large, central vacuoles. During the subsequent day period, when the stomata are closed , the malic acid is decarboxylated, producing $CO_2$, which is refixed photosynthetically in the usual manner. The ecological significance of CAM is that, it brings about great water conservation for the plant when the evaporation demand is greatest.

## OBJECTIVE

To study the $C_3$ to CAM shift with the onset of stress during a summer drought by following the changes in titratable acidity.

## MATERIAL AND METHOD

*Portulacaria afra*

**Plant propagation**:

Mother plants of *Portulacaria afra* were collected from a local nursery. Stem cuttings from them were used for vegetative propagation of the plant. Two sets were made of ten pots each.

First set of plants were grown in controlled condition, cuttings were rooted in potting mix of sandy soil and garden soil. These were watered every 3rd day to maintain high tissue water potentials

Second set of plants were subjected to water stress at a two-week interval. Plants were re-watered by filling pots with water and spraying the leaves.

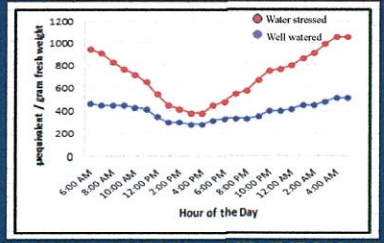
## (TAN) TITRATABLE ACID NUMBER

Fresh healthy fully expanded leaves of the plant were selected. The hour of the day was noted.

1g leaf material was weighed, cut into small pieces and boiled in water for 15-20 minutes.

The solution was filtered and made up to fixed volume with water. A known volume of filtrate was titrated against 0.1 N NaOH using phenolphthalein as an indicator.

The NaOH required to neutralize the known volume of the filtrate was noted and from this the number of ml of N/10 NaOH required to neutralize 100 g fresh weight of the tissue was calculated.




## OBSERVATIONS AND RESULTS

- The shift from $C_3$ to CAM appears to commence in drought induced plants where base line titratable acidity can be seen to be increased from around 300 µeq / g of fresh weight to 400 µeq / g of fresh weight .
- Water stressed plants show titratable acidity around 900 µeq / g of fresh weight during the early morning hours which is significantly high compared to 420-450 µeq / g of fresh weight seen in controlled, thus indicating maximum amount of acids stored in the large vacuoles throughout the night.
- Titratable acidity goes on decreasing as the stored acid is getting used up through out the day thus indicating maximal rate of $CO_2$ uptake shifting from daytime to the night and early morning hours.
- All these factors indicates operation of CAM photosynthesis.

## DISCUSSION

- Well watered plants showed less diurnal acid fluctuation throughout the 24 hours cycle. While the water stressed plants show prominent fluctuations in the amount of diurnal organic acid.
- When water was withheld from plants, a steady decrease in relative water content was seen after a initial short lag period.
- The diurnal acidity did not appeared to be changed for about 1 week , after two weeks it decreased steadily suggesting stomatal closure and hence consequent limiting $CO_2$.
- After rewatering, slow return of controlled level of organic acid fluctuations were observed.

## CONCLUSION

- Increasing diurnal acid fluctuations appears to be related to increasing day time temperature and decreasing $CO_2$ Uptake .
- Increasing evaporative demand and low transient plant water potentials could initiate the process of CAM induction in plants.

## REFERENCE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- James R. Ehleringer (1979) Photosynthesis and Photorespiration : Biochemistry, Physiology, and Ecological Implications science, Vol. 14(3).June 1979


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