Iluminación
Chemistry in Assamese Culture
HOLONG TREE
TAMUL PAN
BOTA
EDITORIAL
KHARIKA
RANG GHAR
JOKA RITI
DOI
TEA
MAHUA RIS

EDITORIAL

'Illumination refers enlightenment which refers to the state of understanding.

Assam, known as the 'Gateway of the Northeast' is the meeting ground of diverse ethnic groups. The culture of Assam is a blend of tradition, lifestyle, faith, belief and religions of the different communities living in Assam. With this edition of wall magazine we have tried to showcase the fusion of chemistry with our Assamese Culture. As modern science has gone too far while making an effort to explain the inner workings of the world around us, this is a humble attempt to remember and refurbish the contributions of our culture to the understanding of nature as well as our society.

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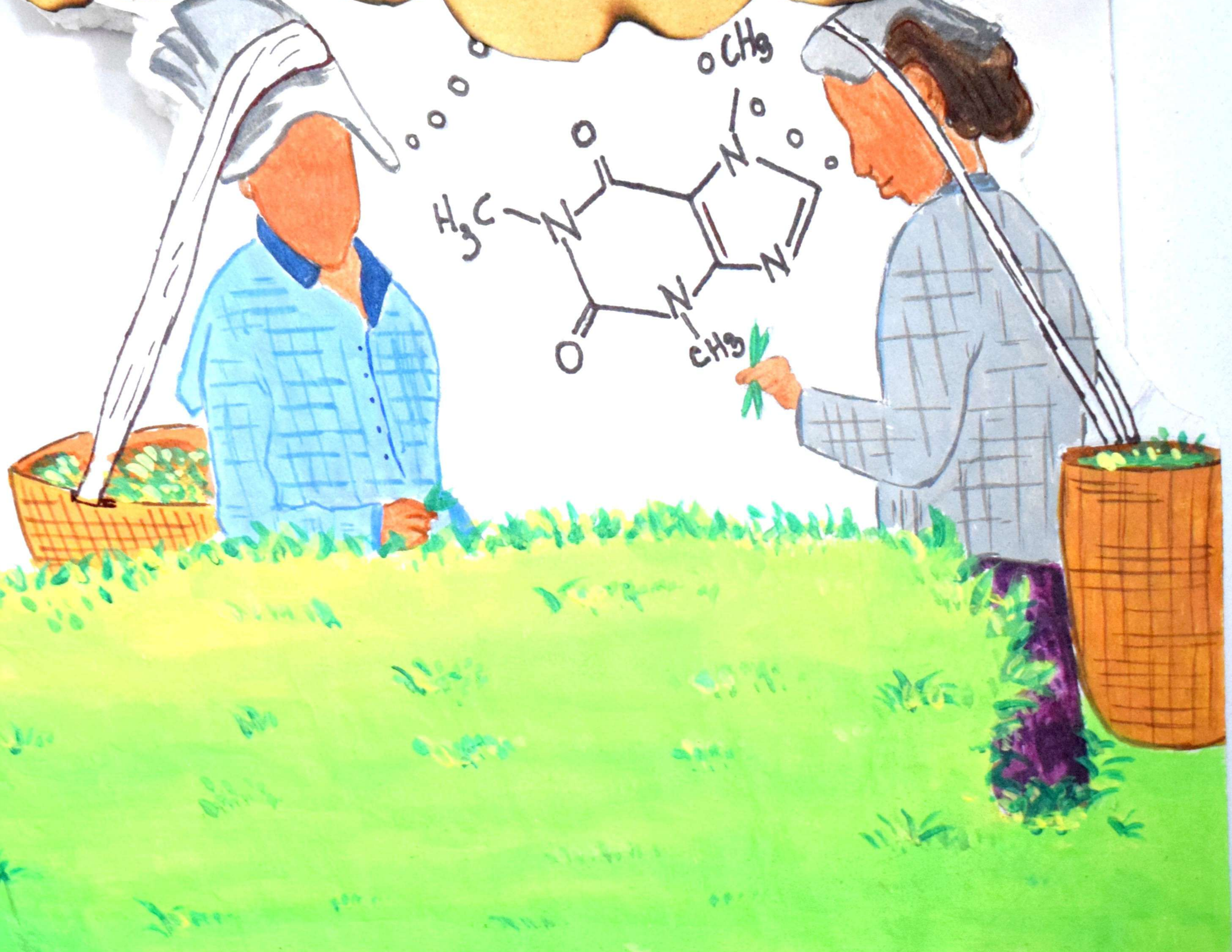
HOLLONG TREE
Scientific name- Dipterocarpus retusus
Hollong, the state tree of Assam has been traditionally used as a source of dammar, resin, nuts and camphor. Many chemical such as Vaticanol A, scopoletin, humulene, borneniu etc. are isolated from the bark, which possess the property of resin. It is also reported that plant of genus Dipterocarpus have many bioactives including anti-bacterial, antioxidant, cytotoxic, anti-inflammatory and anti filarial activities.
—Hiran Jyoti Kalita
—Madhurjya Barman
B.Sc 4th Semester

TEA

Scientific Name : Camellia sinensis

Tea, one of the most widely consumed beverages in the world is rich in catechins, phenolic acids, flavanals, etc, contributing to variety of health benefits including anticancer, anti-diabetic properties. Caffeine is the major alkaloid present in tea improving alertness and stimulate metabolism. In India research is done on tea at the Tocklai Tea Research Institute, which was founded in the year 1911 on the Southeast edge of Jorhat.

– Simantadeep Das
– Nikhil Bharali
B.Sc 4th Semester



OH
MUGA SILK
Assam is famous for the world's strongest natural protein yarn, Muga silk. The fibre is produced by the Muga silkworm. Silk consists of two protein fibres fibroin and sericin. Fibroin is made up of amino acids (Gly-Ser-Gly-Ala-Gly-Ala) and forms β-pleated sheets and also forming hydrogen bonds between chains and side chains. The high proportion of Gly present allows tight packing.
Gly Ser Gly Ala Gly Ala
-Nisha Das
B.Sc 4th Semester

XORAI

The xorai is manufactured from bell metal and brass. Brass is an alloy primarily made from copper and zinc. Basic modern brass is 67% of copper but it may range from 55% to 95% by weight and 33% zinc but ranging from 5% to 45% by weight. It is used to keep holy book and offer tamul pan.

29 63.546
Cu
Copper

30 65.39
Zn
Zinc

– Antarip Lahkar
– Raaz Barman
B.Sc 4th Semester

RANG GHAR

Rang ghar is said to be the oldest amphitheatre in the whole of Asia and an unavoidable element of sculpture in assamese culture. The Ahoms, who used a paste of rice and eggs as mortar instead of cement. Later studies found that rice husk ash contains amorphous silica which is confirmed by powder XRD. The advantages of egg shell associated with the high calcium content and good filling effect.

– Bhargav pratim Gogoi
B.Sc 4th Semester.

KHARISA

Kharisa are widely researched for their phytosterols having high amount of fiber having anticarcinogenic activity. They are highly enriched with carbon, nitrogen elements.

KAJI NEMU

Kaji nemu is the first lemon to get GI tag of Assam. It is sour in taste because of the citric acid present. The essential oil of kaji nemu is rich in D- limonene, β-pinene, γ- terpinene. It is useful in the cosmetics and pharmaceutical industry.

OMITA KHAR

The chemical constituents of omita khar are as follows: Sodium, iron, potassium, alkalinity (2944 mg/lit). It cleanses stomach and cures gastric problems.

MATIMAHOR DALI

Black gram also known as Matimahor dali in Assam holds a high protein value. It is rich in potassium, calcium, iron, niacin, thiamine and riboflavin

JOHA RICE

Joha rice is a short grained rice. The chemical constituents being proteins, phenolic compounds, flavonoids, carbohydrates. It also has a high level of acetyl and pyrroline giving it a sweet aroma.

DOI

Doi is taken up after a heavy meal. It is rich in calcium, phosphorus, potassium magnessium and sodium and is a significant source of vitamin B_{12}. It helps in digestion and improves immunity.

- Bishnujyoti Kashyap
- Raqtar Nal Kalita

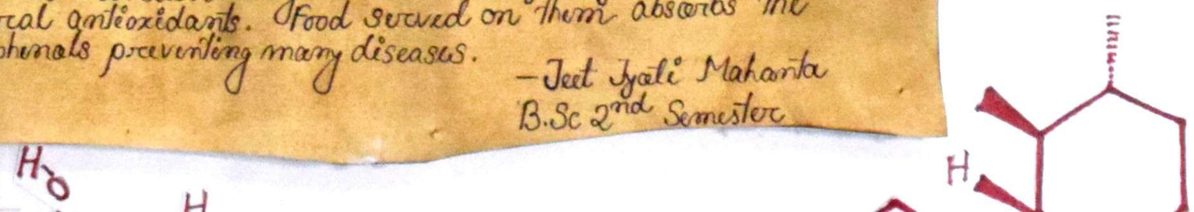
B.Sc 4th Semester

KOLPAAT

Kolpaat contain large amounts of polyphenols that are natural antioxidants. Food served on them absorbs the polyphenols preventing many diseases.

- Jeet Jyoti Mahanta

B.Sc 2nd Semester



BOTA
The bota is used to offer tamul pan and is made up mainly of bell metal, which is an alloy of copper and tin consisting of 78% copper and 22% tin by mass.
-Bhargab Deka
-Banajit Medhi
B.Sc 4th Semester

TAMUL PAN

Both betel nut and betel leaves are the major delicacies of Assam. A variety of chemicals have been identified from both of them such as alkaloids (Arecaline), tannins, triterpenoids, fatty acids, minerals (including Aluminium and iron), chavicol, etc. Tannin is the major component which makes betel nut bitter. Triterpenoids such as isatic acid and its derivatives are also found. Lauric and nutmeg acids are the major fatty acids present in the nut. The chavicol is a type of phenol found in the leaf having antiseptic properties.

— Abinash Sharma.
— Nikita Tahu
B.Sc 4th Semester

KOLAKHAR

Kalakhar, a traditional food popular amongst the different communities in Assam is derived from banana plants. It is quite rich in alkalinity mainly due to potassium, sodium, carbonate and chloride etc. and hence used as an antacid. It is also an excellent renewable source of potassium carbonate (K_2CO_3) for commercial exploitation. According to researchers kalakhar contains significant amounts of vanadium and zinc and trace amounts of aluminium and iron and overall effect of the chemicals is responsible for its pharmacological effects.

— Ankurima Kakati
B.Sc 2nd Semester

B.Sc 2nd Semester

JETUKA

Jetuka has an important role in Assamese culture. Leaves of jetuka contains lawsone (2-hydroxy-1,4-napthoquinone) also known as hennatannic acid. Lawsone reacts chemically with keratin in skin and hair via Michael addition, resulting in strong permanent stain. Lawsone intermis also contains phenolic compounds and others. Application of jetuka leaves over the skin can cure inflammation and helps in blood purification.

— Mayuram Madhurjya Barman
— Kaustav Moni Barman
B.Sc. 4th Semester

MAHI INK

Mahi, a unique herbal ink prepared with cow urine as extractant had deep and fast colour due to its resistance to aerial oxidation and fungi. The major phytochemical constituents present are flavanoids, tannins and phenolic acids (neutralized by ammonia). A small amount of iron leads to the formation of an iron-polyphenol complex intensifying the colour of the ink which was used for manuscript writing.

– Parismita Nath
B.Sc 4th Semester

BHEDAILOTA

Scientific name: Paederia foetida

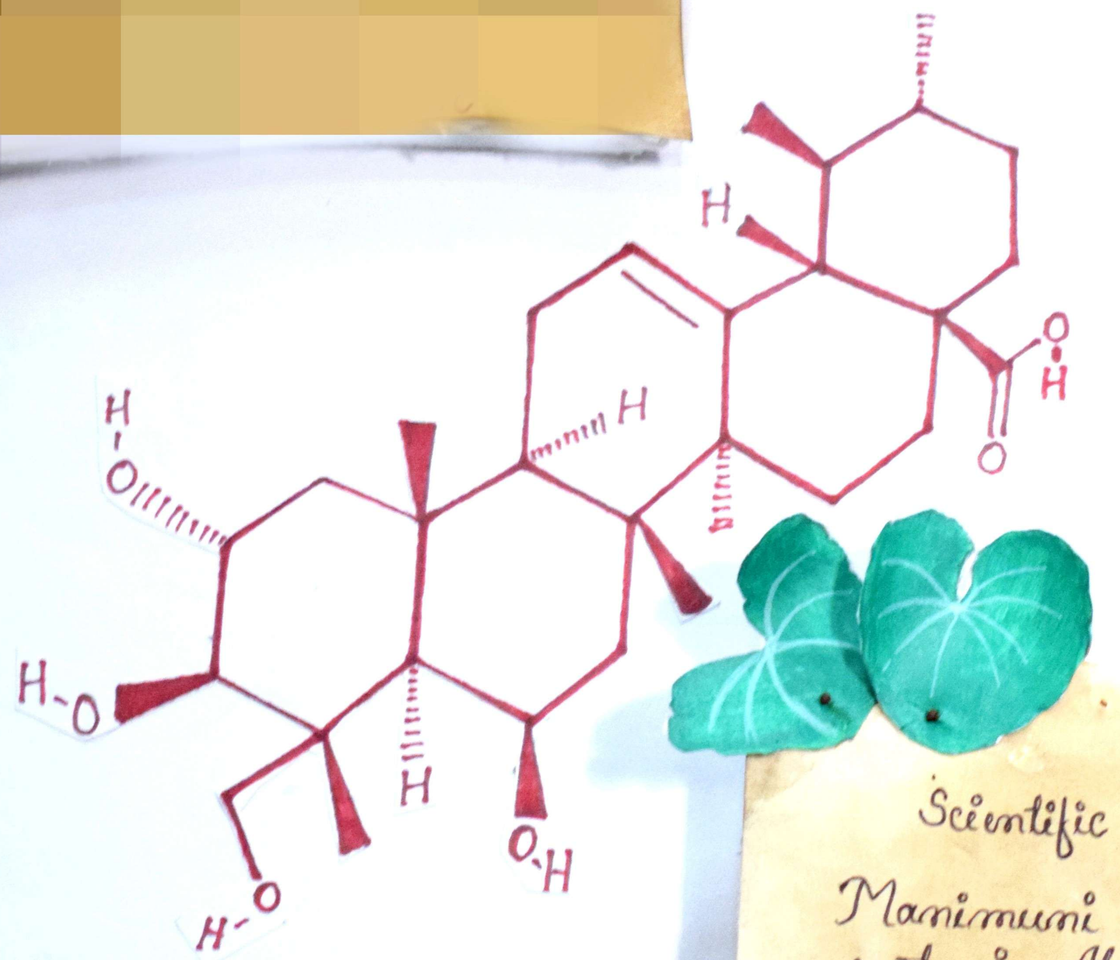
This medicinal plant contains sulfur compounds, including largely dimethyl disulphide. It is used to cure gastrointestinal problems like diarrhea, chronic dysentery, dyspepsia.

– Birlong Phangcho
B.Sc 4th Semester

MASUNDARI

Scientific name: Houttuynia cordata

Masundari is a medicinal plant which is a rich source of amino acid, vitamins, potassium, zinc, iron, copper and manganese. It has antiviral, antibacterial and anti-inflammatory properties.



Madecassic acid (brahmic acid)

Madecassic acid has a role as an antioxidant and a plant metabolite.

MANIMUNI

Scientific name: Centella asiatica

Manimuni have been used as medicinal herb for centuries. It comprises of pentacyclic triterpenoids including asiaticoside, brahmoside, asiatic acid and brahmic acid. Its said to cure stomach ailments such as diarrhoea and dysentry.