

20 APRIL 2019

Ganga has higher proportion of antibacterial agents

In News:

A study commissioned by the Union Water Resources Ministry to probe the “unique properties” of the Ganga found that the river water contains a significantly higher proportion of organisms with antibacterial properties.

In Brief:

The study, ‘Assessment of Water Quality and Sediment To Understand Special Properties of River Ganga,’ was conducted by the Nagpur-based National Environmental Engineering and Research Institute (NEERI), a CSIR lab.

The NEERI team was tasked with assessing the water quality for “radiological, microbiological and biological” parameters in the Bhagirathi (a feeder river of the Ganga) and the Ganga at 20 sampling stations.

As part of the assessment, five pathogenic species of bacteria (Escherichia, Enterobacter, Salmonella, Shigella, Vibrio) were selected and isolated from the Ganga, Yamuna and the Narmada and their numbers compared with the bacteriophages present in the river water.

Because bacteriophages are a kind of virus that kill bacteria, they are frequently found in proximity to each other.

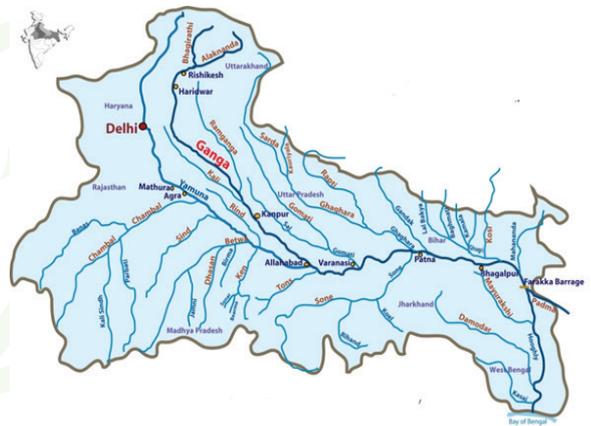
In the river Ganga, the bacteriophages were detected to be approximately 3 times more in proportion than bacterial isolates.

Though it isn’t evident that there are bacteriophage species unique to the Ganga, the study suggests there are many more of them in the Ganga than in other rivers.

Thus, samples drawn from the Ganga contained almost 1,100 kinds of bacteriophage, and proportionally there were less than 200 species detected in the samples obtained from the Yamuna and the Narmada.

Ganga may contain unique microbial life, which makes it relatively more resilient to putrefaction, was suggested by British colonial scientists about 200 years ago.

The super-phage isolated from Ganga and decoded for its lysine gene and cloned to produce lysine protein at IIT Roorkee holds great potential as an antibacterial pharmaceutical,” the report asserts.



The Ganga River System

The total length of the Ganga is about 2,510 km. The river basin is bounded by the Himalayas on the north, by the Aravalli on the west, by the Vindhyas and Chhotanagpur plateau on the south and by the Brahmaputra Ridge on the east. The river is a lifeline to millions of Indians who live along its course and depend on it for their daily needs. From time immemorial, Ganga has been the holiest river of the Hindus. It is thus also a culturally important river of India.

Source of origin: The Ganga rises from the Gangotri glacier near Gomukh in Uttarkashi district of the state of Uttarakhand.

Confluence or Mouth: The Ganga river drains into the Bay of Bengal before forming a very huge delta.

The course of the Ganga river

The Ganga is called the Bhagirathi above Devprayag and below this town, the Ganga. The Ganga initially flows in the southern direction, then in the south-east direction up to Mirzapur and then in the east direction in the Bihar plains. Near the Rajmahal hills, it turns into south-east direction and after flowing some distance in Murshidabad district of West Bengal, it enters Bangladesh. In Bangladesh, it gets divided into two main distributaries- the Bhagirathi and the Hugli. The main river goes to Bangladesh where it is firstly known by the name of the Padma and then the Meghna which drains into the Bay of Bengal.

Note



The Five Prayags

1. **Devaprayag**, the place of confluence of Bhagirathi river and Alaknanda river.
2. **Rudraprayag**, the place of confluence of Mandakini river and Alaknanda river.
3. **Nandaprayag**, the place of confluence of Nandakini river and Alaknanda river.
4. **Karnaprayag**, the place of confluence of Pindar river and Alaknanda river.
5. **Vishnuprayag**, the place of confluence of Dhauliganga river and Alaknanda river.

Primary Tributaries of the Ganga river

The Yamuna River

It is the right-bank tributary of the Ganga. It rises from the Yamunotri glacier on the Banderpunch range. After cutting a deep gorge across the Shivaliks, it flows south-west and enters the Ganga plain at Paonta Sahib. It flows southwards till Agra and moves south-east till it merges with the Ganga at Allahabad. The Tons river, the Chambal river, the Sind river, the Betwa river and the Ken river are its four main right-bank tributaries. The Hindon, the Sharda river, the Varuna river, the Giri river are its major left-bank tributaries.

The Chambal River

The Chambal river rises from a place near Mhow in the Vindhyan range in Madhya Pradesh. Firstly, it flows northwards in a gorge up to Kota, Rajasthan. Below Kota, it flows in the north-east direction till Pinahat. Then it runs east and parallel to the Yamuna before merging in it at Etawah district of Uttar Pradesh. Banas river, Kali Sindh river and Parvati river are its major tributaries.

The Ramganga River

It is a left-bank tributary of the Ganga. It rises in the Kamaun range of the Himalayas near Nainital in Uttarakhand. It enters the Ganga plains near Kannauj, Uttar Pradesh.

The Gomati River

It is a left-bank tributary of the Ganga. It rises from Gomat Tall in the Pilibhit district of Uttar Pradesh. It joins the Ganga at Ghazipur in Uttar Pradesh before flowing through the cities of Lucknow and Jaunpur.

The Ghaghara River

It is a left-bank tributary of the Ganga. It rises from Mapcha Chung Glacier in Tibet region. The river is known by the name of Karnali in Nepal. It joins the Ganga at Chhapra. The Sarda river and the Rakti river are its important tributaries.

The Sarda River

It rises from the Milam Glacier in the Great Himalayas in Nepal. It flows along the Indo-Nepal border before leaving the Himalayas at Baramdeo. The river is known by different names- Kali, Sarda, Kheri, Chauka. It joins the Ghaghara river at Bahramghat.

The Gandak River

It is a left-bank tributary of the Ganga. It rises from the Great Himalayas in Nepal. The river is known by the name of Kalyani in Nepal. It joins the Ganga at Sonpur near Patna, Bihar.

The Kosi River

It is a left-bank tributary of the Ganga. The Arun, the Sun Kosi and the Tamur rivers which drain Mount Everest and the Kanchenjunga hills in east Nepal unite to form the Kosi river in the north region of Mahabharta range of the Himalayas. It is an antecedent river. The Kosi flows through the Tarai region of Nepal. The catchment area of the river receives immense rainfall leading to floods. The river has changed its course and ruined a large area. Because of the havoc created and the floods, the Kosi is termed as Bihar's "River of Sorrow".

The Damodar River

It rises in the Chhotanagpur Plateau and flows in the eastern direction in Jharkhand. The river passes through a rift valley. It joins the right-bank of Hoogly river near Fulta. The Barakar river is an important tributary of Damodar.

The Mahananda River

It rises in the Darjeeling hills. It is the last left-bank tributary of the Ganga river in India.

Note



Major River Valley Projects/Dams/Barrages associated with the Ganga river system

- **The Tehri Dam-** It is the highest dam in India. It is constructed on the Bhagirathi river at Tehri in the state of Uttarakhand. The dam is a lifeline for many people as it generates electricity, provides irrigation and municipal water supply to lakhs of people. The dam is in a highly earthquake prone area (Zone V). Noted environmentalist Sunderlal Bahuguna had led the Anti-Tehri Dam movement for many years.
- **The Tanakpur Dam-** The dam has been constructed at Tanakpur in Uttarakhand on the river Kali.
- **The Chambal Project-** This is a joint project of Rajasthan and Madhya Pradesh. The main aims of the project are providing irrigation, power generation and prevention and control of soil erosion in the Chambal valley. Three dams have been built on the Chambal river- Chaurasigarh, Madhya Pradesh; Kota, Rajasthan; and Rawatbhata, Rajasthan. Rana Pratap Sagar and Jawahar Sagar are the reservoirs being formed by the dams at Rawatbhata and Kota respectively.
- **The Rihand Project-** It is the most important multipurpose project of Uttar Pradesh. A dam is constructed on Rihand river near Pipri in Mirzapur district of Uttar Pradesh. Rihand river is a tributary of Son river. Son Canal is also constructed which supplies water to Bihar. Reservoir-Govind Ballabh Pant Sagar is constructed on the Uttar Pradesh-/Chhattisgarh border.
- **The Kosi Project-** Kosi Barrage has been constructed along the Indo-Nepal border. It is an irrigation, flood control and hydro-electricity generation project on the Kosi River built under a bilateral agreement between Nepal and India.
- **The Gandak Project-** It is a joint project of the Indian states of Bihar and Uttar Pradesh and Nepal. It is constructed on the river Gandak. A barrage is constructed at Valmikinagar, Bihar. Electricity is generated at Suratpura power station in Nepal which caters the power needs of Tarai region.
- **The Ramganga Project-** It is an irrigation and a hydro-electric project on the Ramganga river, a tributary of Ganga. It is located in the Jim Corbett National Park region.
- **The Damodar Valley Project-** It is India's first multipurpose river valley project. It was started in 1948 based on the Tennessee River Valley Corporation of the USA. Important dams under the project are- Panchet Dam on the Damodar river; Tailaiya Dam, Maithon Dam and Bal Pahari Dam on the Barakar river (a tributary of Damodar); Konar Dam on the river Konar (a tributary of Damodar); Bakora Dam on the Bokaro river (a tributary of Damodar). Also, the Durgapur barrage on the Damodar river in Durgapur has been created for the storage of irrigation water.

Asian Tea Alliance launched in China

In news:

The Asian Tea Alliance (ATA), a union of five tea-growing and consuming countries, was launched on 19th April 2019 in Guizhou in China.

Background:

Members: Indian Tea Association, China Tea Marketing Association, Indonesian Tea Marketing Association, Sri Lanka Tea Board and Japan Tea Association.

Boosting tea trade

- ATA plans to work towards enhancing tea trade, cultural exchanges, technology exchanges as well as globally promoting tea.
- It will also work towards enhancing global consumption of tea, while creating a sustainability agenda for the future of Asian tea.
- The forging of this alliance comes close on the heels of the signing of a memorandum of understanding in December 2018 between the Indian Tea Association and China Tea Marketing Association.
- The two associations signed the pact to promote green and black tea consumption in major tea markets of Europe, the U.S., Russia and West Asia, besides India and China.

Note



Cases of measles show alarming rise, warns WHO

In News:

The number of cases of measles, one of the world's most contagious diseases is climbing, warned the World Health Organisation (WHO), stating that preliminary global data shows that reported cases rose by 300% in the first three months of 2019, compared to the same period in 2018.

In Brief:

In 2017, the most recent year for which estimates are available, it caused close to 1,10,000 deaths. Worse, in recent months, spikes in case numbers have also occurred in countries with high overall vaccination coverage, including the United States of America as well as Israel, Thailand, and Tunisia, as the disease has spread fast among clusters of unvaccinated people.

The actual numbers of cases — captured in global estimates — will also be considerably higher than those reported. We estimate that less than 1 in 10 cases are reported globally, with variations by region. With this as the background to date, 2019 has seen 170 countries report 1,12,163 measles cases to WHO. As of this time last year, there were 28,124 measles cases from 163 countries.

Globally, this is almost a 300% increase. Countries with the most reported cases include Madagascar, Ukraine, India, Nigeria, Kazakhstan, Chad, Myanmar, Thailand, the Philippines and Democratic Republic of the Congo.

India at risk

To eliminate measles and control rubella, mass [over 95%] immunisation of children is required. In India, measles is still one of the leading causes of death in young children. About 15% of vaccinated children fail to develop immunity from the first dose, meaning that if only 80% are fully immunised, an outbreak is likely.

WHO's African region has recorded a 700% increase, the region of the Americas 60%, the European region 300%, the Eastern Mediterranean 100% and 40% increases have been observed in South-east Asia and the Western Pacific.

Many countries are in the midst of sizeable measles outbreaks, with all regions of the world experiencing sustained rise in cases. Current outbreaks include those from Democratic Republic of the Congo, Ethiopia, Georgia, Kazakhstan, Kyrgyzstan, Madagascar, Myanmar, Philippines, Sudan, Thailand and Ukraine, causing many deaths — mostly among young children.

The disease is almost entirely preventable through two doses of a safe and effective vaccine. For several years, however, global coverage with the first dose of measles vaccine has stalled at 85%. This is still short of the 95% needed to prevent outbreaks, and leaves many people, in many communities, at risk. Second dose coverage, while increasing, stands at 67%.

Nepali sat-1

Why in news:

Nepal successfully launched its First Satellite from NASA's rocket launching centre at Virginia on Thursday.

In Brief :

It is part of the Birds-3 program, a joint project of Nepal's Government and Japan Space Agency (JAXA).

About Nepali Sat -1:

- NepaliSat-1 also known as BirdNPL is a Nepalese low orbit research satellite and the first satellite of Nepal.
- It was launched along Raavana 1, a Sri Lankan satellite and the satellite launch marked its global space age debut along with Sri Lanka.
- It is expected to reach the International Space Station around 20 April 2019 and estimated to revolve the Earth for six months.



Note



Prelims Titbits:

Assam is the largest producer of tea in India, India is second largest producers of tea in the world, First by China.

Historical Background:

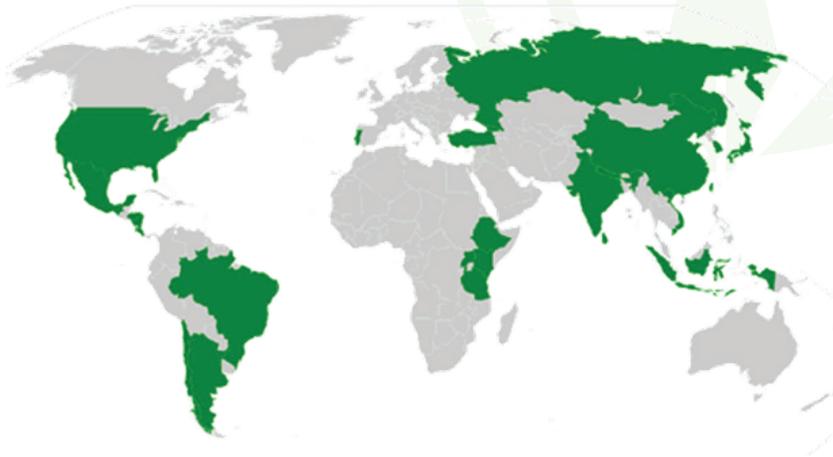
Tea as well as tea consumption was prevalent in China (also in North East India) for thousands of years.

East India Company and China Tea Trade

- The pioneer work in the development of India tea was done by East India Company.
- The efforts to encourage tea cultivation began as early as from the times of Governor General Warren Hastings, who in 1776 had instructed one of the officers to prepare notes on cultivation of new crop into India.
- But no one in the company bothered much until 1833 because till that time, East India Company enjoyed monopoly in tea & silk trade with China, making huge profits.
- China used to provide these two commodities to East India Company in return for silver and bullion. But in 1833, the Chinese did not renew the agreement with British and thus their monopoly ended.



Tea producing countries around globe



Note





Note

