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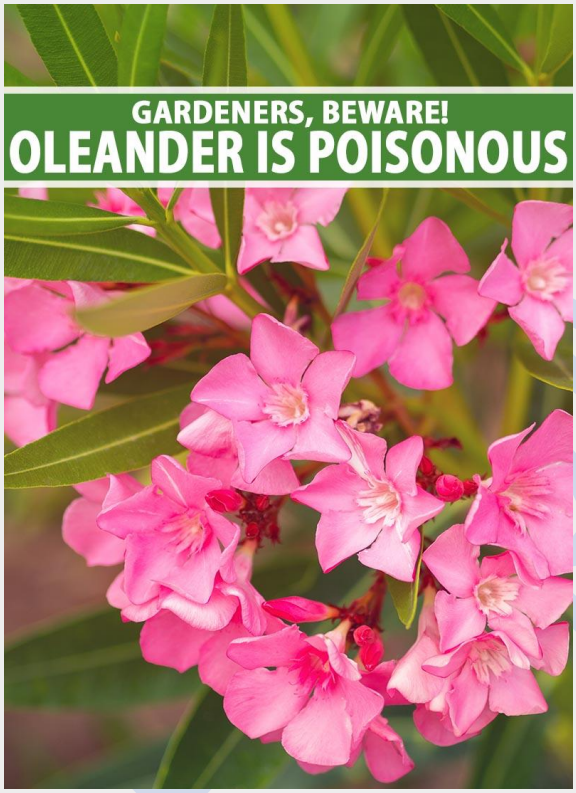
1. Why Kerala has banned oleander flowers in temple offerings

Why in News?
Two Kerala government-controlled temple boards, which together manage 2,500-odd temples in the state, have banned use of oleander flowers (locally known as arali) in temple offerings after a 24-year old woman died after accidentally chewing some oleander leaves.



Here is all you need to know about oleander, its medicinal uses, and toxicity.

First, what exactly happened?
Surya Surendran, a 24-year old nurse, died on April 30, prima facie due to accidental oleander poisoning. Surendran had gotten a new job in the UK, and was set to depart on April 28. That morning, however, she chewed some leaves of the oleander plant which grew outside her house in Pallipad, Alappuzha. She was on her phone, and probably did not understand how dangerous this was.

She soon developed uneasiness, and vomited a few times. Later that day, she collapsed at the Kochi airport, and died a couple of days later at a hospital. When asked about what she had eaten, she had told doctors about chewing oleander leaves and flowers. The forensic surgeon, who conducted her autopsy, informed the police about poisoning from oleander.

What is oleander?
Nerium oleander, commonly known as oleander or rosebay, is a plant cultivated worldwide in tropical, subtropical, and temperate regions. Known for its drought tolerance, the shrub is often used for ornamental and landscaping purposes.

In Kerala, the plant is known by the names of arali and kanaveeram, and is grown along highways and beaches as a natural, green fencing. There are different varieties of oleander, each with a flower of a different colour.

How is oleander used in traditional medicine?

The Ayurvedic Pharmacopoeia of India (API), a government document that describes the quality, purity, and strength of drugs used in Ayurveda, mentions oleander. According to API, an oil prepared from the root bark can be used to treat skin diseases.

How toxic is oleander?

Even though it is prescribed in some ayurvedic formulations, oleander's toxicity has also long been recognised across the world. Moreover, ingestion or inhalation of smoke from burning oleander can also be intoxicating.

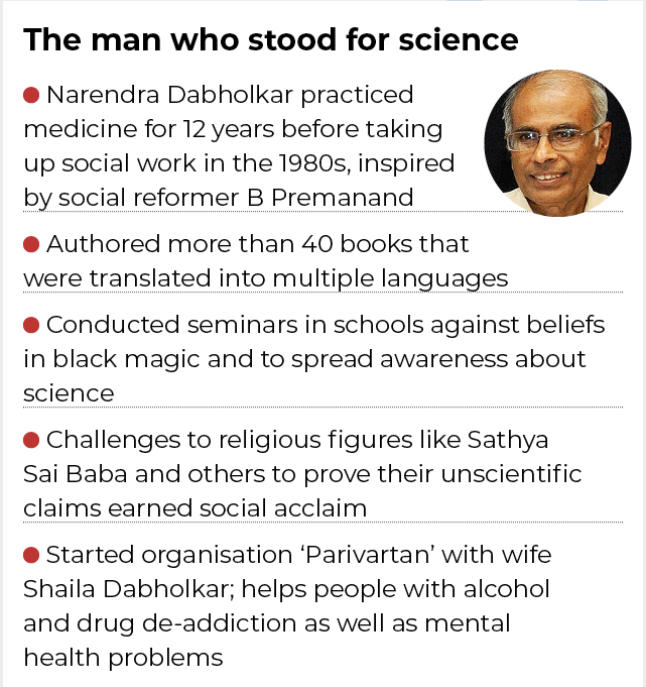
This is due to the properties of cardiac glycosides (a type of chemical) including oleandrin, folinerin, and digitoxigenin, which are present in all parts of the plant.

Cardiac glycosides are steroidal compounds capable of exerting pharmacological effects on cardiac muscle. The primary therapeutic value of these glycosides lies in their ability to exert profound tonic effects on the heart [stronger and faster heart contractions]. However, the therapeutic window is small and overdose/toxicity is frequently encountered when using these drugs.

Effects of oleander toxicity include nausea, diarrhea, vomiting, rashes, confusion, dizziness, irregular heartbeat, slow heartbeat, and, in extreme cases, death.

Relevance: GS Prelims; Science
Source: Indian Express

2. Rationalist Narendra Dabholkhar's murder case



Why in News?

More than a decade after the murder of rationalist Dr Narendra Achyut Dabholkar, a Special Unlawful Activities (Prevention) Act (UAPA) Court in Pune pronounced its verdict recently.

Two alleged assailants, Sachin Andure and Sharad Kalaskar, were convicted and sentenced to life imprisonment, while three others – Dr Virendrasinh Tawade, Sanjeev Punalekar and his aide Vikram Bhave – were acquitted for the lack of evidence.

Dabholkar's murder and three other similar murders, that of communist leader Govind Pansare (February 2015), Kannada scholar MM Kalburgi (August 2015) and Bangalore journalist Gauri Lankesh (September 2017), had sparked nationwide debate surrounding issues of freedom of speech and various hostile forces to rational thought.

Over the years, the investigating agencies examining these cases have pointed to some similarities and the possibility of common perpetrators.

The three other murders

Dr Govind Pansare, 82: Member of Communist Party of India and labour union leader, he was shot at his residence in Maharashtra's Kolhapur district on Feb 20, 2015. He succumbed to his injuries

Professor MM Kalburgi, 77: The academic was shot dead at his residence in Dharwad in Karnataka on Aug 30, 2015. He had retired as vice-chancellor of Kannada University in Hampi.

Gauri Lankesh, 55: The editor of Lankesh Patrike was shot dead outside her residence in Bengaluru on Sep 5, 2017. She was an outspoken critic of rightwing politics and a champion of Dalit, tribal and minorities' rights.

Who was Narendra Dabholkar?

In late 1980s, Dabholkar revitalised the superstition thought process by founding Maharashtra Andhashraddha Nirmoolan Samiti (MANS) after leaving his decade-long medical practice. He aggressively took on deep rooted superstitious practices and their proponents.

Over the years, while MANS continued efforts towards eradication of superstitious activities, Dabholkar made several attempts to build an anti-superstition legislative framework. He not only faced opposition by various organisations and political parties but also delays in enacting the law by the governments of the time.

Ironically, within days after his murder, the Maharashtra government cleared the pending Anti-Superstition and Black Magic ordinance, which became law in December 2013. Along with being the long-time editor of Marathi weekly Sadhana, which champions liberal thought, Dabholkar was very active in movements dedicated to scientific temperament and equality among various sections of the society.

Dabholkar was shot dead by two men while he was on a morning walk on a bridge near Omkareshwar temple in Pune on August 20, 2013. He was 67.

Relevance: GS Prelims & Mains Paper I; Indian Society
Source: Indian Express

3. ISRO successfully tests 3D-printed rocket engine

Introduction

Indian Space Research Organisation (ISRO) on recently successfully tested a liquid rocket engine made with the help of additive manufacturing technology — commonly known as 3D printing.

The engine, PS4, which is used as the engine for the fourth stage of the Polar Satellite Launch Vehicle (PSLV), was redesigned by ISRO for production using 3D printing.

What is 3D printing?

3D printing is a process that uses computer-created design to make three-dimensional objects layer by layer. It is an additive process, in which layers of a material like plastic, composites or bio-materials are built up to construct objects that range in shape, size, rigidity, and colour.

How is 3D printing done?

To carry out 3D printing, one needs a personal computer connected to a 3D printer. All they need to do is design a 3D model of the required object on computer-aid design (CAD) software and press 'print'. The 3D printer does the rest of the job.

Additive and Subtractive manufacturing

3D printers construct the desired object by using a layering method, which is the complete opposite of the subtractive manufacturing processes. Think about the great Italian sculptor Michelangelo making his masterpiece sculpture David. He famously carved out the colossal statue from one single block of marble. This is an ideal example of the subtractive manufacturing method.

3D printers, on the other hand, build from the bottom up by piling on layer after layer until the object looks exactly like it was envisioned.

How different from 2D printers?
The (3D) printer acts generally the same as a traditional inkjet printer in the direct 3D printing process, where a nozzle moves back and forth while dispensing a wax or plastic-like polymer layer-by-layer, waiting for that layer to dry, then adding the next level. It essentially adds hundreds or thousands of 2D prints on top of one another to make a three-dimensional object.

Notably, these machines are capable of printing anything from ordinary objects like a ball or a spoon to complex moving parts like hinges and wheels.

Why did ISRO use 3D printing to build the PS4 engine?
The technology helped ISRO bring down the number of parts in the engine from 14 to a single piece. The space agency was able to eliminate 19 weld joints and saved 97% of raw material. It also reduced the overall production time by 60%.

Relevance: GS Prelims & Mains Paper III; Science & Technology
Source: Indian Express