



## World Heart Day

Heart Day is part of an international campaign to spread awareness about heart disease and stroke prevention. This is the perfect day to quit smoking, get exercising and start eating healthy, all in the name of keeping your ticker in good working order, and improving the health and well-being of people, world over. As World Heart Day is all about drawing people's attention to heart diseases and illnesses, as well as the range of health issues that are associated with this, it makes sense to raise awareness and also improve your own understanding.

## #FASTING

### Here's what happens inside the body when you fast

When you fast, the body undergoes several physiological changes over time, as it adapts to the absence of food.



Most people undervalue the power of fasting. That thinking might change if you break down the effects of fasting, hour-wise, on the body. To do that, we contacted Dr. Maneendra, Consultant and HOD, Critical Care department, Gleneagles Hospitals, Lakdi Ka Pul, Hyderabad.

"When you fast, the body undergoes several physiological changes over time, as it adapts to the absence of food," said Dr. Maneendra.

**Here's what occurs**  
**0-4 hours:** Immediately after eating, the body focuses on digestion and absorbs nutrients. "Blood sugar and insulin levels rise, providing energy," shared Dr. Maneendra.

**4-8 hours:** As digestion completes, blood sugar and insulin levels drop. Dr. Maneendra said that the body uses glycogen (stored glucose) in the liver and muscles for energy.

**8-12 hours:** Once glycogen stores deplete, the body uses fat for energy. According to Dr. Maneendra, this is called ketosis, where fatty acids are converted into ketones, fueling the brain and muscles.

**12-16 hours:** The body continues in fat-burning mode, and ketone levels rise. "Growth hormone production may increase, aiding fat breakdown and muscle preservation," shared Dr. Maneendra.

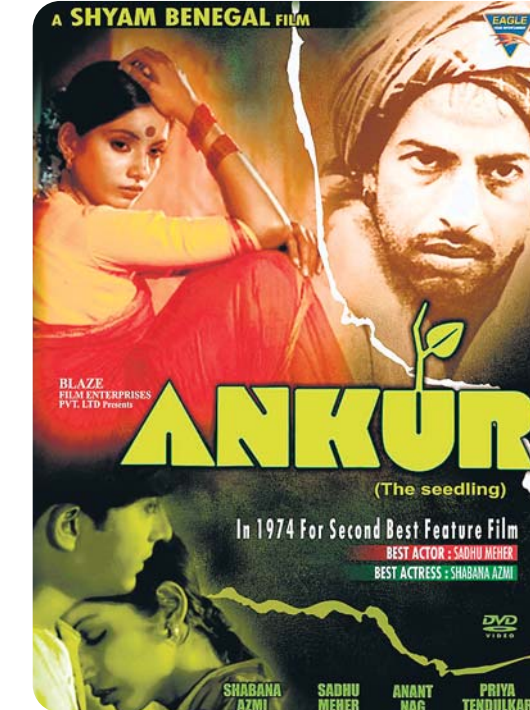
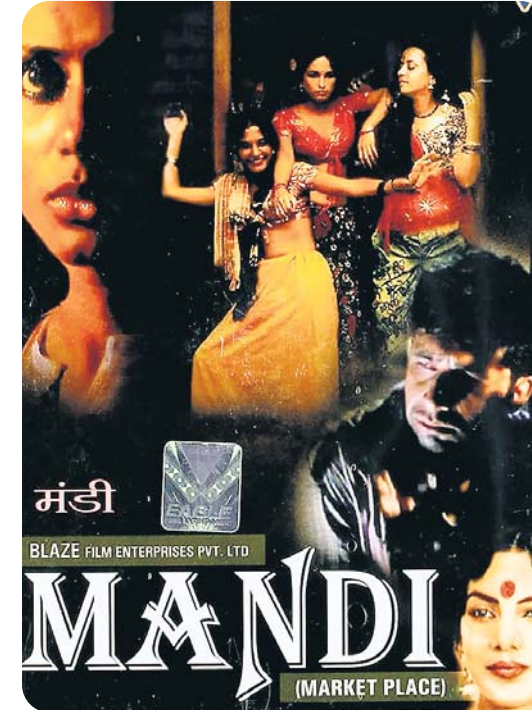
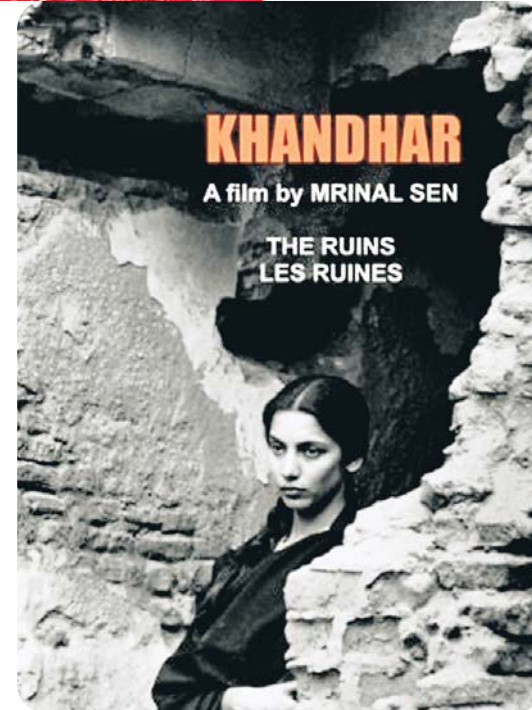
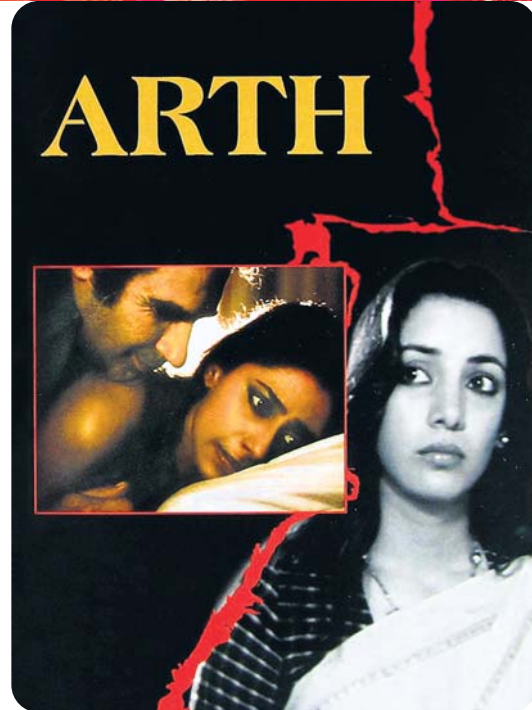
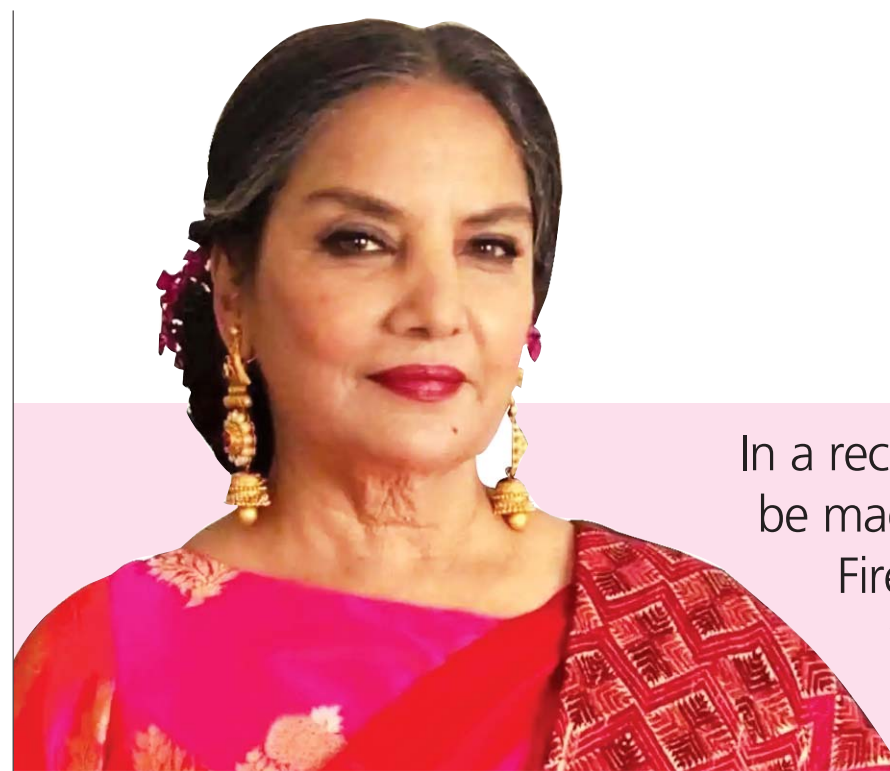
**16-24 hours:** Autophagy begins when cells start to

repair themselves by breaking down and recycling damaged components. Dr. Maneendra explained that inflammation reduces, and the body focuses on cellular maintenance. "Autophagy is the body's way of cleaning out damaged cells, in order to regenerate newer, healthier cells. Reducing your daily calorie intake by 10-40 per cent can trigger autophagy," shared Parmeet Kaur, Head and Chief Nutritionist and Dietician, Marengo Asia Hospitals, Gurugram.

Kaur further shared that autophagy may increase in activities that cause stress to the cells, such as a lack of nutrients during prolonged fasting for two to three days.

**24+ hours:** Ketosis deepens, and autophagy increases. "Insulin levels drop significantly, promoting fat loss and enhancing the body's ability to manage blood sugar," shared Dr. Maneendra.

However, Dr. Maneendra said that fasting longer than 24 hours should be done with medical supervision, as it can lead to nutrient deficiencies and other complications.



Dr. Shoma A. Chatterji  
Film Scholar,  
Journalist & Author

Azmi. Lakshmi is the wife of a deaf-mute farmer, who is a Dalit wage-labourer (Sadhu Meher) in the village zamindar (Anant Nag) home, where his wife works as a housemaid. The young zamindar manipulates an affair with the maid, though, he is a married man. Through these incidents, the film defines a sharp critique on casteism, sexual exploitation, silent abuse of the zamindar's wife (Priya Tendulkar) and physical torture of the deaf-mute labourer. The Dalit labourer's muteness is not just physical, but also metaphorical. It depicts the forced silence of a very poor Dalit pitted against the affluent, powerful, high-caste and exploitative zamindar, who turns his back even when the Dalit woman becomes pregnant. *Seedling (Ankur)* marks one of the most timeless debuts in Hindi Cinema, both by Shyam Benegal and by Shabana Azmi. Azmi bagged the National Award for Best Actress, the following year.

*Mandi* (Marketplace, 1983) is one of the few films till date that revolve around the system of prostitution in the fringes of Hyderabad city, in a red-light ghetto. The action centers on a brothel threatened by land-grabbers and construction promoters. The film is unique in that it uses burlesque as the mode to examine the dynamics of a whorehouse. Shyam Benegal tempers the film with an air of black comedy, allowing also, for a certain amount of crude voyeurism in keeping with the socio-economic backdrop of the film's narrative. Benegal said of the film, "I was very keen on creating a whole microcosm of Indian life, the survival instinct, as evident in Shabana's character, middle-class hypocrisy, the manipulation that goes on constantly, and the young pecking the old." The story goes that Shabana Azmi put on around 20 kgs to her body

## #SHABANA AZMI



weight to make her role of *Rukmini Bai*, madam of a brothel, convincing enough at a relatively young age. She changed her body language, chewed *paan* endlessly and put on the *andaz* that brot-el madams of the times, based in Hyderabad and its outskirts, were known for.

*Arth* (1982), directed by Mahesh Bhatt, is a strong film that makes a powerful feminist statement, without raising slogans or holding candle-light marches. And it marks the journey of a young wife, Pooja Malhotra (Shabana Azmi), who is married to a film director, and the couple has just moved into a spacious apartment. But before they can settle down, the husband informs Pooja that he is involved with the actress, Kavita Sanyal (Smita Patil), and is leaving her. She is shocked beyond belief because she believed that theirs was a comfortable marriage. She is completely heart-broken. Soon, she collects herself together, and slowly, learns to take care of her life and her needs. The affair does not last long but when

the husband arrives and asks his wife to take her back, she refuses. Arth sees a young Shabana Azmi in one of the finest performances of her career. The evolution of Pooja from a simple, naive and happy married woman to a deeply hurt, betrayed wife to a woman who draws strength from the failure of her marriage and learns to live independently. The character is very dynamic and so is that of Kavita Sanyal, portrayed by Smita Patil, but is in sharp contrast to that of Pooja. She also rejects the offer of a second chance with another man because she has learnt to love her independence and her power of endurance.

In Aparna Sen's film *Sati*, Shabana Azmi plays Uma, a born deaf-mute orphan, who lives in her maternal uncle's house and works like a slave. *Sati* marks a rupture in the continuity of the logic of 'autonomous choice', that Aparna Sen as director, espouses in her other films. The 'silence' of Uma registers the combined influence of traditional patriarchy and feudalism, where relations of



hanging by this slender thread of hope that her daughter will finally find her own home. Jamini knows that this man she was once betrothed to, will never come. He is already married and lives in the city with his family. But she lives with this secret because she knows that the truth will surely kill her mother. She persuades Subhash (Nasseruddin Shah), a photographer, who has arrived from Calcutta with his two friends, to pretend to be her missing fiancé to appease her mother. He is hesitant, but agrees. The blind mother is happy.

Back in the city, we find Jamini's photographs clicked by Subhash, without her knowledge, hanging along the walls of his studio. For him, she was no more than just a model like the other models whose sophisticated pictures hang beside hers. Shabana Azmi gives one of her most outstanding performances as Jamini. Her sole point of relief in a life of isolation and loneliness is in the little white goat that she picks up and caresses from time to time, or peeps from behind the peeling walls to look at the three young men, as there is no man in her life.

These are just five of the 100-and-odd films of Shabana Azmi, now 74, which will remain in the archives of Indian cinema in all time to come. Among other outstanding performances that deserve in-depth analysis and critique are *Spardha*, directed by Sai Paranjyoti, *Faar*, directed by Gautam Ghose, *Ek Din Achanak*, directed by Mrinal Sen, *Shatranj Ke Khilari*, directed by Satyajit Ray, *Ek Doctor Ki Maut*, directed by Tapan Sinha, *Mriyudand*, directed by Prakash Jha, *Godmother*, directed by Vinay Shukla and *Fire*, directed by Deepa Mehta, to her recent different films like *What's Love Got To Do With It?* and *Rocky Aur Rani Kii Prem Kahani*, not stopping to put

a comma, a semi-colon or full-stop to her exploring of her own talents. One mystery that bugs her fans, is what kept her from directing a film? She has never been worshipped for her beauty as she does not compare fairly with the likes of her colleagues like Hema Malini or her successors like Katrina Kaif, but she holds on to her own, making each and every film an enriching learning experience.

Her marriage to Javed Akhtar has been as unusual as her life has been, as he was a married man with two growing children. Her strongly left-minded parents dissuaded her from marrying a man, with two growing children and a wife, but she stuck out, deciding to live life on her own terms. The only thing in her life she feels sad about is that she could never bear a child, though, her relationship with her two step children, Farhan and Zoya Akhtar, is excellent. She has been bestowed with the *Padma Shri* and the *Padma Bhushan* besides having won many international awards over the years.

In a recent interview to fit into her 74th birthday, she said, "I feel it's wrong for women in our society to be made to feel incomplete, just because they are not mothers. Just like my character in Deepa Mehta's *Fire*. Because I was involved in many other areas of life and productive activities, I wasn't judged for not having children. But I'm sure it'd have been wonderful to have children. And yes, I've never had time for any regrets."

She has been a committed social worker engaged in different causes that all society and she still remains the sole Indian actress to have bagged *five National Awards* as Best Actress.

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# FIFTY YEARS, FIVE GREAT MOVIES AND MORE...

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## #SCIENCE

### Dark Oxygen is changing the Calculus of Extraterrestrial Life

The discovery of oxygen production in the deep oceans has profound implications for the origins of life, both, here and elsewhere in the universe.

Earth's oxygen is something of a puzzle. Until recently, scientists believed that it is produced entirely by photosynthesis, plants using sunlight to convert carbon dioxide and water into glucose and oxygen.

But earlier this year, oceanographers discovered an entirely new source of oxygen. Deep in Earth's oceans, they found oxygen levels much higher than can be explained by photosynthesis alone, which typically occurs near the surface where sunlight can penetrate.

The researchers concluded that the oxygen must be produced in the deep ocean itself, probably as a result of an electrochemical reaction between metal nodules on the ocean floor and seawater. In other words, without sunlight at all.

That's an eye-opening result. On Earth, oxygen is crucial for life, so the fact that it can be produced in darkness, deep in our oceans, dramatically extends the habitats where life can thrive.

And not just on Earth. Planetary geologists have spotted oceans on moons throughout the Solar System, and discovered exoplanets, that seem to be ocean worlds. Sunlight is not always abundant in these places, particularly beneath thick icy crusts.

So, an important question is what the discovery of this 'dark oxygen' means for life on Earth and whether it might somehow allow life to exist in unexpected places, elsewhere in the universe.

**Submarine Life**  
Now, Manasvi Lingam at the Florida Institute of Technology and colleagues provide some insight into this question. They propose that dark oxygen is common throughout the Solar System and beyond, and that it has the potential to support complex animal-like life in places that, otherwise, receive little or no sunlight. "Our findings indicate that complex life, fueled by



dark oxygen, is plausibly capable of inhabiting submarine environments, devoid of photosynthesis on Earth, conceivably extending likewise to extraterrestrial locations such as icy worlds with subsurface oceans (e.g., Enceladus and Europa), which are likely common throughout the Universe," they say.

Biologists have long catalogued the role of oxygen in cellular function, particularly in mitochondria, which generate energy in cells. Almost every cell processes oxygen in this way, and the few examples, that do not, are parasites that survive because of the oxygen processed elsewhere by other cells.

Life on Earth also seems to have thrived and deteriorated in step with changing oxygen levels throughout history. For example, evolutionary biologists believe that an increase in oxygen levels, some 540 million years ago, played a crucial role in the Cambrian explosion, when life rapidly evolved from single cells to complex multicellular organisms.

So, if oxygen is so important, and an important caveat here is that the causal relationship between life and oxygen is still hotly debated by

biologists, then what kind of life could dark oxygen support? Lingam and team investigate this question by studying dark oxygen levels in the deep ocean and comparing it to the type of life, supported by similar levels, elsewhere. This allows them to estimate the size and complexity of life that it could support.

"We infer that organisms, limited by internal diffusion, may reach maximal sizes of 0.1-1 mm in habitats with dark oxygen," they say. But organisms, able to pump oxygen around their bodies, could become much larger, perhaps, up to the size of softbills, 10 centimeters in size.

They go on to calculate that the dark oxygen produced in Earth's oceans could support a density of creatures up to 30 grams per square meter. That's similar to the densities actually measured in deep ocean surveys.

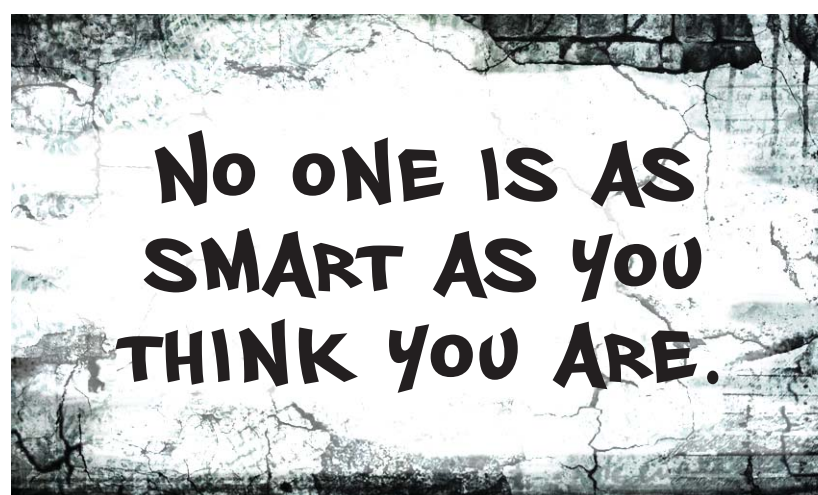
**Hadean Creatures**  
All this is exciting work. Astrobiologists have long imagined that oceans on Jupiter's moon Europa or Saturn's Enceladus could support life. But they've also worried about the lack of sunlight, particularly beneath ice crusts.

Then, there are so-called *Hadean worlds*, a new class of ocean planets that astronomers have found tentative evidence of, around other stars. Most of these stars are red dwarfs, which are significantly less bright than our Sun. So, if these planets have oceans, light is unlikely to penetrate more than a few meters beneath the surface, significantly reducing the potential for photosynthesis. Dark oxygen could calm these fears. Metal nodules are likely to be common in our Solar System and elsewhere. So, any electrochemical reaction with water is likely to be common too.

Of course, none of this amounts to evidence of extraterrestrial life or anything close to it. But it does suggest that the variety of landscape, and oceanscape, in which life could evolve is more diverse than we'd ever imagined.



## THE WALL



## BABY BLUES



By Rick Kirkman & Jerry Scott

## ZITS



By Jerry Scott & Jim Borgman