India taking steps to reduce reliance on imports of APIs

Govt to encourage API production under Make in India, says chemicals and fertilisers minister

DEBASIS MOHAPATRA
Bengaluru, 23 February

Domestic drug manufacturers, which mostly import APIs from China, have seen a sharp spike in the prices of raw materials after China shut down many API-producing plants

India is taking steps to reduce its dependence on imports of active pharmaceutical ingredients (APIs) — a commonly used raw material for drugs — by manufacturing it in the country.

Domestic drug manufacturers, which mostly import APIs from China, have seen a sharp spike in the prices of these raw materials after China shut down many API-producing plants owing to environmental concerns.

This had prompted pharmaceutical lobby groups to demand for a hike in prices of medicines currently under the price control.

"We want to promote API production in India under the Make in India initiative. Many foreign investors have shown interest in setting up such facilities here," said Sadananda Gowda, Union minister for chemicals and fertilisers. The minister also said that already such plants have come up in Assam and Andhra Pradesh.

Gowda said the government was trying to provide affordable healthcare to every citizen under the National Health Protection Scheme.

"Currently, around 800 generic medicines are under price control. This shows our intention to provide affordable health care to every citizen under the scheme," Gowda said.

Under the universal health coverage scheme, Ayushman Bharat, the government is planning to provide medicines at a cheaper rate to beneficiaries. As part this, he said, a central warehousing facility for generic drugs would be opened in Karnataka to provide generic medicines to patients at a lower cost under the Pradhan Mantri Jan Aushadhi Yojana.

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>
> **SADANANDA GOWDA**
> Union minister for chemicals and fertilisers

However, the minister defended the government's move of setting up a committee within the NITI Aayog that will recommend medicines for price control, raising concerns over the dilution of the key role of the National Pharmaceuticals Pricing Authority (NPPA) in fixing drug prices.

"We have never intervened in the functioning of autonomous organisations. So, the fear is misplaced," he said.

The minister also said many affirmative policy actions by the government had helped the domestic pharmaceutical industry come back on the growth track after facing headwinds in 2017.

Currently, the domestic pharmaceutical industry is valued at over $34 billion, with half of the earnings coming from exports. India is also one of the leading producers of generic drugs in the world.

With growth coming back, the industry hopes to clock a compounded annual growth rate (CAGR) of 15 per cent in the coming years, the minister added.

Domestic firms fret over higher aluminium imports

JAYAJIT DASH
Bhubaneswar, 23 February

Battered by spate of cheaper aluminium imports into the country, domestic producers are irked at the narrowing gap between scrap imports and domestic sales.

Between April and December this financial year, scrap imports touched 1,001 tonnes, steadily closing in on the gap with sales of 1,191 tonnes by domestic makers.

Year-on-year (y-o-y), scrap imports rose 19 per cent. Imports other than scrap spiked 24 per cent in the period under review, pushing up overall aluminium imports by 21 per cent by volume. At the end of December 2018, the share of imports to the country's total aluminium consumption had swelled to 60 per cent, unnerving producers.

In the run-up to the Interim Budget for 2019-20, domestic producers, represented by Aluminium Association of India (AAI) had lobbied for hike in import duties of scrap and downstream products. AAI suggested to the government to raise import duty on scrap from 2.5 per cent to 10 per cent and revise it to 20 per cent from 7.5 per cent for downstream products.

While the Budget was mute on tweaking duties, the Union government's recent stand to retain status quo on import duty rates, possibly fearing a backlash from the World Trade Organization (WTO), dashed hopes of both primary and secondary aluminium manufacturers.

"Import of scrap, downstream and 'fake semis' are expected to increase in the coming months if the government does not take any action. The profitability of primary producers will be affected to the extent of realisation difference between export and domestic sales. If downstream import from China goes up at the same rate, downstream producers in India will be in trouble," said an industry source.

The country's growth and consumption parameters in aluminium are robust. Consumption of the white metal expanded by 11 per cent during April-December 2018.

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Consulting, systems lead the recruitment charge at XIMB

NIRMALYA BEHERA
Bhubaneswar, 23 February

Consulting, systems and marketing sectors accounted for about 78 per cent of the recruitment at the annual placements of Xavier Institute of Management, Bhubaneswar (XIMB).

While consulting lead with 29 per cent share of the recruitments, systems finished a close second with 28 per cent. Marketing and BFSI (banking, financial services and insurance) were the other notable recruiters, with a share of 21 per cent and 14 per cent, respectively. Operations grabbed the residual eight per cent of the recruitment pie.

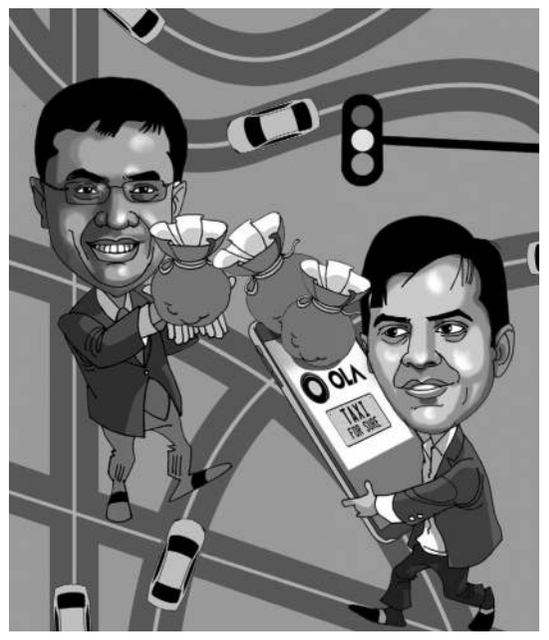
Over 100 companies visited, 54 of which were first-time recruiters. New recruiters included Anand Rathi, Hewlett Packard, KPMG, Lenskart, Nissan, OYO, Reckitt Benckiser, Salesforce, Reliance Brands, Tetra Pak, Xiaomi, Rustomjee, among others.

Average and median compensation rose 11 per cent this year, with the B-school successfully placing the entire batch. Forty seven students succeeded in converting their pre-placement offers into jobs.

"People are struggling for jobs in the country. Still, we have ensured 100 per cent placements like any other top institutions," said Paul Fernandes, director, XIM-B. Godrej offered the highest salary offer at ₹24.5 lakh per annum. The average annual compensation stood at ₹14.31 lakh per annum. The highest annual compensation for consulting was offered at ₹21.24 lakh, followed by finance (₹18.2 lakh), operations (₹16.67 lakh) and systems (₹15.5 lakh).

Job profiles offered to the future managers included risk management, strategic consulting, corporate finance, equity research, marketing, sales and distribution, supply-chain management, among others.

PEOPLE IN THE NEWS — BINAY SINHA



In the largest personal investment deal in domestic internet sector, Flipkart co-founder Sachin Bansal has invested ₹650 crore in Bhavish Aggarwal-led homegrown ride-hailing platform Ola

Former Ranbaxy promoter Malvinder Singh has filed a criminal complaint against younger brother Shivinder and Radha Soami spiritual head Gurinder Singh Dhillon alleging death threats and fraud

HEALTH

FIT & PROPER

Your weekly health guide

Future of cancer care

GAURAV THUKRAL
COO and critical care specialist
HealthCare atHOME

Around 2.25 million people in India are living with cancer. The situation worsens every year, with the addition of around 1.15 million cases. Lip, oral cavity cancers top the chart for men where as breast cancer tops the chart for women. Despite numerous studies and experiments, cancer cure remains elusive. Early diagnosis and management are the best bets against this dreadful disease.

Medical care has changed drastically over the past few years. Earlier, cancer care was only possible in a hospital. However, with time, in-hospital care has changed to OPD care or day care in which patients only go to the hospital for chemotherapy sessions.

The next big leap in cancer care is home healthcare. Patients, who are on medical treatment, do not have to travel to a hospital for any procedure and all the treatment can be provided at home with the quality of hospital. The care of patients who require surgical management or radiotherapy has also revolutionised as most of the pre- and post-surgical care, hydration therapy and nutrition therapy are all available at home. Medical care has seen a steady evolution and expected breakthroughs are as follows.

Immunotherapy: Cancers are difficult to fight due to their ability to fool body's immune system, which often treats them as normal cells. Immunotherapy helps in marking cancer cells and help the immune fight them. Few immunotherapy drugs are already available in the market and few are under clinical trials.

Advanced radiotherapy: The brain controls every system of the human body. Brain cancer can be disabling if not treated. Radiotherapy, the widely accepted treatment for brain cancer, often affect important functions of the brain like memory, processing speed and attention span, often greatly affecting patients' quality of life. Doctors are working to develop new techniques so that these important functions are spared without compromising on the quality of treatment. Initial trials have shown promise and more trials are underway to develop the final technique. Recently, Chennai's Apollo hospital opened India's first proton centre that will use cyclotron to bombard positively charged magnet-controlled proton particles to kill cancer cells. The technique will help patients with tumours in the close proximity of the critical organs.

Liquid biopsy: Tissue biopsies are the confirmatory test for cancer. Tissue from a tumour is collected and studied. In some cases, tissue biopsies are impossible due to the location of a tumour. The surgical procedure also involves high risks and cost. To solve the problem, researchers are exploring a new field called liquid biopsy, which relies on analysing bits of tumour material — molecules as well as whole cells — that are found in bodily fluids such as blood or urine. The technology, still in the infantile phase, can be the future of cancer diagnosis.

Personalised therapy or gene therapy: Available treatments wipe out the healthy cells along with cancerous cells. This led scientists to develop drugs that can specifically target the cancer cells. Initial success came in the form of tisagenlecleucel and axicabtagene, which were approved for certain leukaemia and lymphomas. It is just a matter of time before gene therapy will be available for all types of cancers.

Cardiovascular disease risks can be cut by adequate sleep: Study

PRESS TRUST OF INDIA
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Getting enough sleep can help protect against cardiovascular disease by preventing the buildup of plaques in the arteries, a study has found.

The research, published in the journal *Nature*, describes the mechanism by which insufficient sleep increases production of inflammatory white blood cells known to be major contributors to atherosclerosis.

"We have discovered that sleep helps to regulate the production in the bone marrow of inflammatory cells and the health of blood vessels and that, conversely, sleep disruption breaks down control of inflammatory cell production, leading to more inflammation and more heart disease," said Filip Swirski, from Massachusetts General Hospital (MGH) in the US.

"We also have identified how a hormone in the brain known to control wakefulness controls processes in the bone marrow and protects against cardiovascular disease," said Swirski.

To investigate how insufficient sleep increases atherosclerosis, Swirski's team subjected mice genetically programmed to develop atheroslcerosis to repeated interruptions of their sleep, similar to the experience of someone constantly waking up because of noise or discomfort.

While there were no changes in weight, cholesterol levels or glucose tolerance in the sleep-deprived mice, compared to animals from the same strain allowed to sleep normally, those subjected to sleep fragmentation developed larger arterial plaques and had higher levels of monocytes and neutrophils — inflammatory cells that contribute to atherosclerosis — in their blood vessels.

The research describes the mechanism by which insufficient sleep increases production of inflammatory white blood cells

Further experiments revealed that the sleep-deprived mice had a nearly two-fold increase in the production in their bone marrow of stem cells that give rise to white blood cells. A hormone called hypocretin, produced in the brain structure called the hypothalamus and known to have a role in the regulation of sleep, was found to play an unexpected role in controlling white blood cell production.

While normally produced at high levels when animals — including humans — are awake, hypocretin levels were significantly reduced in the sleep-deprived mice.

The team found that hypocretin regulates production of white blood cells through interaction with neutrophil progenitors in the bone marrow. Neutrophils, they discovered, induce monocyte production through release of a factor called CSF-1, and experiments with mice lacking the gene for hypocretin revealed that the hormone controls CSF-1 expression, monocyte production and the development of arterial plaques.

In sleep-deprived animals, the drop in hypocretin led to increased CSF-1 production by neutrophils, elevated monocyte production and accelerated atherosclerosis.

"This is a direct demonstration that hypocretin is also an important inflammatory mediator," said Swirski.

"We now need to study this pathway in humans, explore additional mechanisms by which proper sleep maintains vascular health and further explore this newly identified neuro-immune axis," he said.

New MRI sensor to peer much deeper into brain

PRESS TRUST OF INDIA
23 February

MIT scientists have devised a new way to image calcium activity that is based on magnetic resonance imaging (MRI) and allows them to image activity deep within the brain. Using this technique, they can track signalling processes inside the neurons of living animals, enabling them to link neural activity with specific behaviours.

"This paper describes the first MRI-based detection of intracellular calcium signaling, which is directly analogous to powerful optical approaches used widely in neuroscience but now enables such measurements to be performed in vivo in deep tissue," said Alan Jasanoff, professor at Massachusetts Institute of Technology. In their resting state, neurons have very low calcium levels. However, when they fire an electrical impulse, calcium floods into the cell, according to the study published in Nature Communications.

DNA gets a new — and bigger — genetic alphabet

CARL ZIMMER
23 February

In 1985, the chemist Steven A Benner sat down with some colleagues and a notebook and sketched out a way to expand the alphabet of DNA. He has been trying to make those sketches real ever since.

On Thursday, Benner and a team of scientists reported success: in a paper, published in Science, they said they have in effect doubled the genetic alphabet. Natural DNA is spelled out with four different letters known as bases — A, C, G and T. Benner and his colleagues have built DNA with eight bases — four natural, and four unnatural. They named their new system Hachimoji DNA (hachi is Japanese for eight, moji for letter).

Crafting the four new bases that don't exist in nature was a chemical tour-de-force. They fit neatly into DNA's double helix, and enzymes can read them as easily as natural bases, in order to make molecules. "We can do everything here that is necessary for life," said Benner, now a distinguished fellow at the Foundation for Applied Molecular Evolution in Florida.

Hachimoji DNA could have many applications, including a far more durable way to store digital data that could last for centuries. "This could be huge that way," said Nicholas V Hud, a biochemist at Georgia Institute of Technology who was not involved in research.

It also raises a profound question about the nature of life elsewhere in the universe, offering the possibility that the four-base DNA we are familiar with may not be the only chemistry that could support life.

> **Hachimoji DNA could be a far more durable way to store digital data that could last for centuries**

The four natural bases of DNA are all anchored to molecular backbones. A pair of backbones can join into a double helix because their bases are attracted to each other. The bases form a bond with their hydrogen atoms.

But bases don't stick together at random. C can only bond to G, and A can only bond to T. These strict rules help ensure that DNA strands don't clump together into a jumble. No matter what sequence of bases are contained in natural DNA, it still keeps its shape.

But those four bases are not the only compounds that can attach to DNA's backbone and link to another base — at least on paper. Benner and his colleagues thought up a dozen alternatives.

Working at the Swiss university ETH Zurich at the time, Benner tried to make some of those imaginary bases real.

"Of course, the first thing you discover is your design theory is not terribly good," said Benner.

Once Benner and his colleagues combined real atoms, according to his designs, the artificial bases didn't work as he had hoped.

Nevertheless, Benner's initial forays impressed other chemists. "His work was a real inspiration for me," said Floyd Romesberg, now of the Scripps Research Institute in San Diego. Reading about Benner's early experiments, Romesberg decided to try to create his own bases.

Romesberg chose not to make bases that linked together with hydrogen bonds; instead, he fashioned a pair of oily compounds that repelled water. That chemistry brought his unnatural pair of bases together. "Oil doesn't like to mix with water, but it does like to mix with oil," said Romesberg.

In the years that followed, Romesberg and his colleagues fashioned enzymes that could copy DNA made from both natural bases and unnatural, oily ones. In 2014, the scientists engineered bacteria that could make new copies of these hybrid genes.

In recent years, Romesberg's team has begun making unnatural proteins from these unnatural genes. He founded a company, Synthorx, to develop some of these as cancer drugs.

At the same time, Benner continued with his own experiments. He and his colleagues succeeded in creating one pair of new bases.