CSIR in Media

Platinum Jubilee 1942-2016

75 Years of

CSIR Touching Lives

A Daily News Bulletin

5th June 2017

CSIR

5th June 2017

दोनों खतरनाक बीमारियों की दवा का पहले चरण का परीक्षण सफल, जल्द बाजार में लाने की तैयारी

गर्व : भारत ने डेंगू-मलेरिया का टीका बनाया

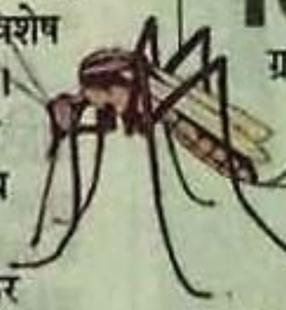
हिन्दुस्तान
एक्सक्लूसिव

नई दिल्ली | मदन जैड़ा

भारतीय वैज्ञानिकों ने मलेरिया और डेंगू जैसी खतरनाक बीमारी का टीका तैयार कर लिया है। इसे जल्द बाजार में लाने की तैयारी है।

मलेरिया के टीके के पहले चरण के मानवीय परीक्षण पूरे कर लिए गए हैं, जबकि डेंगू के टीके के चूहों पर परीक्षण हुए हैं। दोनों टीकों के अगले चरण के परीक्षणों की तैयारी की जा रही है।

विज्ञान एवं प्रौद्योगिकी मंत्री डॉ. हर्षवर्धन ने 'हिन्दुस्तान' से विशेष बातचीत में यह जानकारी दी। उन्होंने कहा कि यह भारतीय वैज्ञानिकों की बड़ी उपलब्धि है कि दोनों टीकों ने पहला पड़ाव सफलतापूर्वक पार कर लिया है। इंटरनेशनल सेंटर फॉर जेनेटिक इंजीनियरिंग एंड बॉयोटैक्नोलॉजी ने टीके तैयार किए हैं। मलेरिया एवं डेंगू मच्छरजनित बीमारियां हैं लेकिन मलेरिया एनाफिलीज तथा डेंगू एडीज इजिप्टाई मच्छर के काटने से होता है।



469 लोगों की मौत हुई थी देश में पिछले साल डेंगू और मलेरिया से

10 लाख लोग मलेरिया और 1.11 लाख लोग डेंगू से ग्रस्त हुए थे वर्ष 2016 में

(राष्ट्रीय वैक्टर जनित रोग नियंत्रण कार्यक्रम केआंकड़े)

चिकनगुनिया का भी टीका जल्द

जैव प्रौद्योगिकी विभाग और सीएसआईआर इन दो टीकों के अलावा चिकनगुनिया के टीके पर भी कार्य कर रहा है।

-डॉ. हर्षवर्धन, विज्ञान एवं प्रौद्योगिकी मंत्री

Published in:

Hindustan, Page no. 6

CSIR faces fund crunch, asks labs to look outside

Pay panel and pension payouts along with scrapping of plan panel's block grants has crippled the scientific organisationThe Council of Scientific and Industrial Research is staring at a fund crunch this year.A letter from the organisation's chief, Dr Girish Sahni, to directors of all of the organisation's 38 labs says that the funding is "tight" and that labs have to look outside of the CSIR to meet their expensesIn any given year, the CSIR— with a ₹4,000 crore annual budget — apportions out about ₹1,200-1,400 crore to its labs for research. This year, according to Dr. Sahni's letter, only about ₹360 crore would be available.

Higher salaries

The crunch was primarily due to the organisation having to meet with increased salary outgo from recommendations of the 7th Pay Commission and a ₹1650 crore-hit towards meeting its pension requirements. These expenses are likely to spill over into the future.

"…Thus, the balance available for lab allocations and various new research projects (including 12th Plan leads, Mission projects etc) is only ₹360 crore. Of this, a sum of ₹158 crore has already been allocated. If we were to release further sums under these heads, we will be left with no funds to support new research projects. This is the stark reality," Dr. Sahni's letter said.

Dr. Sahni, who's in Africa on business, told the The Hindu that while he had "requested the government for more support", several scientists had to "change their mindset and produce value from R&D in keeping with the CSIR mandate."

Dehradun Declaration

In 2015, the CSIR decided that as part of a Dehradun Declaration under Science Minister, Harsh Vardhan's leadership, to generate about 50% of its budget through external sources.

Some scientists, who spoke to The Hindu, described the funds crunch as a "panic situation" and a result of the NDA government's move to scrap the Planning Commission (which allowed the CSIR to access budget research money for a 5-year period) and replace it with a yearly-accounting system.

"There is no money for new projects next year effectively," said one of them, "because the message from above is to make money." The Hindu has previously reported on several projects not being funded.

Dr Sahni's letter also said the CSIR would immediately move towards a regime of ensuring that 50% of Council's budget by 2020 would come from external sources and this year at least 25% be met that way.

"We are already generating 10%-15%..so I don't see this as impossible," Dr. Sahni told The Hindu.

Anjan Ray, Director of the CSIR-Indian Institute of Petroleum, said the fund crunch was an opportunity and part of a CSIR effort to reorganize itself. "Earlier, labs were organised around say, 'chemistry' and 'biology' and now we are thematically organised: Energy, Pharma to strengthen links with industry. This also improves accountability of public funding."

Published in:
The Hindu

CSIR-CRRI

4th June 2017

कचरे से बनेगी सड़क

दुनिया के तमाम देश कूड़े के ढेरों से परेशान हैं। हम भी इनमें से एक हैं। अच्छी खबर यह है कि जल्द कूड़े के ढेर से सड़क बनाने पर काम चल रहा है और वह भी अपने देश में। राजधानी दिल्ली के गाजीपुर लैंडफिल के कूड़े से इसकी शुरुआत की जा रही है। हालांकि इससे पहले देश में प्लास्टिक से सड़कें बनाने का काम सफलतापूर्वक किया जा चुका है। प्लास्टिक से सड़कें दिल्ली, कोलकाता, पुणे, इंदौर, चेन्नै, जमशेदपुर, देहरादून आदि शहरों में बनाई जा चुकी हैं। ये सड़कें न सिर्फ ज्यादा टिकाऊ और सस्ती पड़ रही हैं, ये प्लास्टिक से इन्वाइनमेंट को होनेवाले नुकसान से भी निजात दिलाती हैं। अब इससे भी एक कदम आगे कूड़े से सड़क बनाने की योजना पर काम चल रहा है। दिल्ली नगर निगम, सेंट्रल फॉर रोड रिसर्च इंस्टिट्यूट और नैशनल हाइवेज अथॉरिटी ऑफ इंडिया ने मिलकर यह योजना तैयार की है, जिसके मुताबिक गाजीपुर के कूड़े से ही दिल्ली-मेरठ एक्सप्रेस-वे बनाया जाएगा। पहले चरण में सराय काले खां से यूपी गेट के बीच करीब 8.5 किमी की दूरी में इस कूड़े का इस्तेमाल किया जाएगा। सेंट्रल रोड रिसर्च इंस्टिट्यूट ने इस बारे में काफी रिसर्च की है और उसने सरकार को सौंपी अपनी रिपोर्ट में कहा है कि कूड़े के ढेर से सफलतापूर्वक सड़क बनाई जा सकती

हैं। माना जा रहा है कि सड़क का निर्माण जल्द शुरू हो जाएगा। गाजीपुर लैंडफिल में फिलहाल 50 मीटर से भी ऊंचा कूड़े का ढेर है, जिसका वजन 130 लाख टन से ज्यादा है। इस लैंडफिल में रोजाना करीब 3000 टन कचरा पहुंचता है। वैसे, इस कचरे का इस्तेमाल सीधे सड़क बनाने में नहीं कर सकते। इसमें से शीशा, मेटल, कपड़ा, प्लास्टिक आदि को अलग करना होगा। इसके बाद कचरे के करीब 60-65 फीसदी हिस्से को सड़क बनाने के काम में लाया जा सकेगा। सिर्फ इस लैंडफिल में मौजूद कचरे से करीब 20 किमी लंबी सड़क बनाई जा सकती है। इससे देश के करीब 6000 शहरों में मौजूद कूड़े के ढेरों से मुक्ति मिल सकती है। अगर ऐसा हुआ तो यह वाकई एक बहुत बड़ी कमायाबी होगी।

कूड़े से सड़क बनने की योजना दुनिया में पहली बार हमारे देश में बनी है। इससे जमीन खाली होगी, पलूशन कम होगा और कूड़े का निपटान का भी इससे बेहतर तरीका नहीं हो सकता। इसके लिए पहले प्लास्टिक, कपड़े, ग्लास, मेटल आदि को अलग-अलग करने के लिए एक सेग्रिगेशन प्लांट लगाना होगा। हमारी रिसर्च कहती है कि यह प्रोजेक्ट काफी कामयाब साबित होगा।

- प्रो. सतीश चंद्र, डायरेक्टर, सेंट्रल फॉर रोड रिसर्च इंस्टिट्यूट (CSIR)

Published in:

Sunday Navbharat Times Page no. 8

IITR:डिजिटल इण्डिया से जुड़ा आईआईटीआर, कचरा निस्तारण होगा हाईटेक

CSIR-CRRI

4th June 2017

आईआईटीआर बायोमेडिकल कचरे के कीटाणुशोधन के लिए दुनिया में माइक्रोवेव आधारित ऑप्टिमेजर मशीन के सह-विकास के लिए अनुसंधान और विकास का विस्तार करेगा

लखनऊ.हॉस्पिटल और औद्योगिक कारखानों से निकलने वाले कचरे का निस्तारण अब आसान होने वाला है। कचरा निस्तारण की सही तकनीक न होने की वजह से कचरे से संक्रमण का ख़तरा हमेशा बना रहता है। सीएसआईआरई-विषविज्ञान अनुसंधान संस्थान (सीएसआईआर-आईआईटीआर), लखनऊ ने एस एस मेडिकल सिस्टम्स (इंडिया) प्राइवेट लिमिटेड के साथ "सेंटर फॉर इनोवेशन एंड ट्रांसलेजनल रिसर्च (सितार)" के तहत औपचारिक रूप एमओयू पर हस्ताक्षर किया है। यह एमओयू शुक्रवार को हुआ। आईआईटीआर बायोमेडिकल कचरे/ बायोमेडिकल उपकरणों के कीटाणुशोधन के लिए दुनिया में माइक्रोवेव आधारित ऑप्टिमेजर मशीन के सह-विकास के लिए अनुसंधान और विकास का विस्तार करेगा।

पर्यावरण और स्वास्थ्य को दिया जाएगा ध्यान

आईआईटीआर पर्यावरण, स्वास्थ्य और उद्योग सेवा के लिए आदर्श वाक्य सुरक्षा के साथ विषविज्ञान अनुसंधान में आगे है। यह समझौता ज्ञापन चिकित्सा और जैविक कचरे के निस्तारण से समाज की सुरक्षा के लिए माइक्रोवेव आधारित तकनीक और समाधान को अपनाने का मार्ग प्रशस्त करेगा।

एमओयू पर हस्ताक्षर

इस समझौते पर सीएसआईआर-आईआईटीआर के निदेशक प्रोफेसर आलोक धावन और मनीष भंडारी, कार्यकारी निदेशक / मुख्य तकनीकी सलाहकार, एसएस मेडिकल सिस्टम (इंडिया) प्राइवेट लिमिटेड, ने हस्ताक्षर किए।

"माइक्रोवेव असिस्टेड क्लिनीकल ट्रांसजनल रिसर्च प्रोग्राम" पर सीएसआईआर-आईआईटीआर और एसएस मेडिकल सिस्टम के बीच यह अनुसंधान साझेदारी पशु-घर अपशिष्ट कीटाणुशोधन के लिए नए तरीकों को विकसित करने, नशीली दवाओं, रक्त की थैलियों आदि के संक्रामण को रोकने के लिए माइक्रोवेव प्रौद्योगिकी के दायरे का विस्तार करेगी।

यह एमएसएमई के लिए समर्थन बढ़ाने और व्यापक रूप से एकीकृत करने के लिए केंद्र सरकार की पहल के अनुसार 'मेक इन इंडिया', 'कयाकल्प', "डिजिटल इंडिया" और 'स्टार्टअप इंडिया' पर साथ उत्तर प्रदेश राज्य में सीएसआईआर-आईआईटीआर की पहल है। "स्वस्थ भारत" और "स्वच्छ भारत" के राष्ट्रीय मिशन यह सितार मंच के माध्यम से उद्योग के लिए नवीन वैज्ञानिक और तकनीकी समाधान प्रदान करने के लिए सीएसआईआर-आईआईटीआर में एक नया युग की शुरुआत है।

Published in:

Patrika.com

Sewage to battery grade

CSIR-CECRI

4th June 2017

A new approach to recover sulphur from effluents

Sulphur from a contaminated pond has been successfully recovered and used in a high-performance battery. This waste-to-wealth feat was achieved by a group of researchers from CSIR-Central Electrochemical Research Institute (CECRI), Karaikudi, in Tamil Nadu.

Published recently in the journal *Separation and Purification Technology*, this is the first time that the sulphur recovery process was done by an integrated approach of biological and electrochemical oxidation process.

Water from a pond contaminated by sodium dithionate-processing industry was collected and studied. Sodium dithionate salt is used in many textile industries to remove the excess dye and unintended colours, thereby improving overall colour quality. It is also used in processes in leather, certain food and plastic industries. The effluents from these industries can cause a range of health and environmental hazards. Removal or reduction of the sulphur in the waste water has always been a challenge.

Bio-electrochemical process

Sulphate-reducing bacteria (SRB), which have a natural ability to convert sulphate to sulphide, were used in the biological treatment process. The bacteria are capable of using sulphate instead of oxygen for their energy source. Due to reduced nutrients, the conversion rate to sulphide was very low in the pond. After 72 hours of incubation in lab conditions with additional supply of nutrients,

three dominant strains—*Stenotrophomonas maltophilia*, *Bacillus cereus*, and *Bacillus licheniformis*—in the pond were identified. These bacteria are already used in many industries for treatment of their effluents before discharge.

When the researchers simulated the micro-enviroment where oxygen supply is less by keeping the bacteria without oxygen for 20 days and added iron powder, the bacteria liberated hydrogen sulphide gas. The gas was collected and dissolved in sodium hydroxide to form sodium sulphide. The sulphide was further oxidised to elemental sulphur using an electrochemical process.

A double-compartment cell was constructed, and on passing current, the elemental sulphur precipitated at the electrodes. Though the bacteria are used to treat industrial wastes, this is the first time an electrochemical approach is applied to further convert sulphide to elemental sulphur. This sulphur can be used in various applications such as production of sulphuric acid and liquid sulphur dioxide. Since the cost of pure sulphur is high, the new approach can help recover sulphur from waste and turn it into a resource.

When the recovered sulphur was used as cathode in lithium sulphur (Li-S) battery, a current of 1050 mAh/g was produced. After 10 cycles the current produced reduced to 840 mAh/g. The researchers are planning to conduct more studies to improve the conductivity of the sulphur in order to get higher discharge capacity.

Published in:

Thehindu.com

Way to stop fat cell formation

CSIR-CDRI

4th June 2017

LUCKNOW: Central Drug Research Institute (CDRI) will help fight obesity and high cholesterols levels with the help of modified curcumin (a major component of turmeric). A research by the institute found that curcumin, a natural substance in turmeric, can be chemically modified to make a molecule that can prevent the formation of new fat cells and help activate cholesterol removal machinery.

The team of scientists comprising T Narender, Anil Nilkanth Gaikwad and R Bhatta has been working on the derivative for the last three years. The research has been published in international journal 'Metabolism'. "Curcumin is known for its medicinal properties and helps to fight a number of diseases. But its biggest drawback is that its absorption by the human body is very low. The new molecule has overcome this drawback in that the body absorbs it fast as compared to curcumin," said senior scientist Anil Nilkanth Gaikwad. "The molecule will halt the fat cells and activate the machinery for removal of cholesterol from the body," he added.

He said to study the modified molecule, hamsters were fed a high fat diet and were given 100 mg per kg body weight of curcumin and the new molecule at the same time. It was found that it not only significantly improved the lipid parameter but also ensured that fat storage cell formation was halted, he added.

Published in:

Timesofindia.indiatimes.com

Managing diabetes - the ayurvedic way

CSIR-CIMAP

4th June 2017

'BGR-34' is the first and the only Ayurvedic medicine, which has got into the club of top 20 anti-diabetic Allopathic drugs.

'BGR-34' is the first and the only Ayurvedic medicine, which has got into the club of top 20 anti-diabetic Allopathic drugs. Its efficacy in keeping a check over diabetes has been found a spiralling 67% during clinical trials. Goode news for Ayurveda physicians as well as diabetes patients! Well! In the wake of an increasing acceptance of Ayurvedic medicines among patients, anti-diabetic Ayurvedic drug BGR-34, developed by the Council of Scientific and Industrial Research (CSIR) – the research wing of the Science & Technology Ministry was launched on February 3, 2016, has found a place among the 20 top branded drugs manufactured by multinational Pharma Companies reveals a survey conducted by the All Indian Origin Chemists and Distributors (AIOCD). The AIOCD, which represents over six lakh chemists and druggists across the country, had surveyed 6,367 drugs launched in last two years from the house of the top Indian as well as foreign pharmaceutical companies.

Competing with the allopathic medicine of multinational companies such as Sanofi, Zydus and Lupin, the BGR-34,has been jointly developed by the two laboratories of CSIR,

National Botanical Research Institute (NBRI) and Central Institute for Medicinal and Aromatic Plant (CIMAP). While AIMIL Pharmaceuticals based out of Delhi, is its commercial manufacturing and marketing partner.Indeed, this is a matter of pride for Ayurveda world that for the first time an Ayurvedic drug has managed to get a rank in the list 20 drugs dominated by the allopathic medicines. The boost to the drug, which has been scientifically validated by CSIR, comes months after it bagged a top slot in anti-diabetic Ayurvedic products category in IMS Health ranking. 'BGR-34' – A Unique Composition The drug, having 6 vital phyto-constituent extracts and derivatives makes it promising, safe and effective to help maintain normal glucose levels. It reduces the chances of long term complications.

Functions of 6 Vital Phyto-constituent Extracts & Derivatives: At a glance Daruharidra – This herb improves health & functioning of the pancreas, naturally. Vijaysar – Rich in flavonoids, strengthens the cells and help maintain normal blood glucose level. Giloy – A unique herb to improve immunity besides helping improve resistance to infections. Majeeth – Powerful anti-oxidant activity that helps protect vital organs from oxidative damage. Methika – One of the best sources of Micro-nutrients that nourishes & tones the vital organs. Gudmar – Maintains post-prandial blood glucose level by delaying glucose absorption.

It has been tested on animals and scientific study has found it safe and effective, with clinical trials showing 67% success rate. This drug will also help maintain normal blood glucose levels, reduce chances of complications due to persistent high blood glucose levels and impart a good quality of life to patients with high blood sugar levels.

Likewise anti-diabetic allopathic drugs that provide more insulin, utilise insulin better and avoid extra glucose, BGR-34 also improves insulin action, which can help more insulin sensitivity so that your cells can take glucose more effectively and helps the body produce more insulin only when it is needed, and reduces the amount of glucose being produced by the liver when it is not needed. These hormones are released throughout the day and their levels are increased at the times of meal. These substantial features make it the most studied and clinically approved drug among all the available herbal agents against diabetes.

Results of the effect of the medicine are enormously significant in regulating the amount of glucose in the blood of diabetic patients. This is why this medicine is equating with anti-diabetic medicines of international companies.

Of late, the anti-diabetic BGR-34 is supposed to emerge as safe healer for diabetics. It will also go a long way in taking the legacy of Ayurveda forward and connecting the missing dots between ancient and modern treatment modalities of Ayurveda. However, the credit of preparing the medicine following the modern standards goes to the scientists of CSIR.

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Why it feels hotter in Connaught Place than most parts of Delhi

CSIR-NPL

4th June 2017

New Delhi: While the summer heat is unbearable for everyone, some parts of the capital may be far warmer than the average. The difference between the coolest part of the city and one of these "heat islands" could be as high as between 5 and 10 degrees Celsius. Several scientific studies have raised alarm bells about the impact of what they call the "urban heat island" effect. Now a latest study (to be published in July) by the CSIR-National Physical Laboratory (NPL) and Indian Meteorological Department (IMD) has compared the average temperature difference between Safdarjung and NPL area near Pusa road between 2010 and 2013 to compute the urban heat island (UHI) and found that Safdarjung experienced an UHI ranging from 0.2 to 3 degrees.

High UHI was observed in morning time as compared to day and night times, with the highest magnitude ranging from 2.8 to 3 degrees Celsius in spring, autumn and winter seasons at morning between 7am and 9 am. "The analysis revealed that UHI effect exists in the Safdarjung area (see graphic) due to presence of more built-up surface and relative lack of vegetation areas as compared to NPL area," the study stated.

The study added that a UHI of magnitude 0.2 -3 degrees is capable of rising electricity demand by of 37.87 GWh to 1,856 GWh over the base electricity supply of the city and corresponding rise in CO2 emissions would be 0.031-1.52 million tonnes. In simple terms, the energy demand could rise by as much as 6% if the UHI is 3 degrees. Similarly, Connaught Place in central Delhi is among the hottest parts of the city.

The authors pointed out that the UHI effect is linked to land use. Satellite pictures show NPL has much larger area of vegetated land (66.6%) as compared to Safdarjung/Bhikaji Cama Place(32.8%) while the built up area in Safdrajung is much large, 67.2%, compared to 33.4% in NPL.

IIT-Delhi's Centre for Atmospheric Sciences has done a number of studies on UHI trends in Delhi. In their 2012 study IIT-Delhi had found very high UHI in certain areas in the range of 8.6 to 10.7 degrees. The green and riverside areas had a low UHI (3.1 to 6.9 degrees).

Latest Comment

Another trend scientists are noticing is an increase in night-time temperature. "We are noticing that the difference between day time and night time temperature is reducing. During the day the solar heat is absorbed and then it takes very long to escape at night. This is because of more built up area which is trapping the heat. Satellite pictures show that more and more area is getting affected," said Manju Mohan, IIT-Delhi professor. AC exhausts also have a major role to play.

On average, the difference in temperature in a heat island compared to the coolest part of the city can be 4 to 5 degrees Celsius. Solutions lie in better urban planning and some immediate interventions. "Greenery to reduce anthropogenic heat, more reflective surfaces, enough space between buildings, greenery on buildings are some of the possible solutions," added Mohan.

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