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Exposure to insecticides may up diabetes risk: study

Synthetic chemicals commonly found in insecticides and garden products bind to the receptors that govern our biological clocks.



Exposure to insecticides adversely affects melatonin receptor signalling, creating a higher risk for metabolic diseases such as diabetes. (Photo: AP)

Washington: Exposure to synthetic chemicals found in insecticides may lead to a higher risk for metabolic diseases such as diabetes and also affect sleeping patterns, researchers including one of Indian origin have warned.

Synthetic chemicals commonly found in insecticides and garden products bind to the receptors that govern our biological clocks, researchers said. Researchers at University at Buffalo (UB) in the US suggest that exposure to these insecticides adversely affects melatonin receptor signalling, creating a higher risk for metabolic diseases such as diabetes.

The research combined a big data approach, using computer modelling on millions of chemicals, with standard wet-laboratory experiments. Disruptions in human circadian rhythms are known to put people at higher risk for diabetes and other metabolic diseases but the mechanism involved is not well-understood.

"This is the first report demonstrating how environmental chemicals found in household products interact with human melatonin receptors," said Margarita L Dubocovich, Professor in the Department of Pharmacology and Toxicology at

UB. "No one was thinking that the melatonin system was affected by these compounds, but that's what our research shows," she said.

The research focused on two chemicals, carbaryl, the third most widely used insecticide in the US but which is illegal in several countries, and carbofuran, the most toxic carbamate insecticide, which has been banned for applications on food crops for human consumption since 2009. It is still used in many countries, including Mexico and traces persist in food, plants and wildlife, researchers said.

"We found that both insecticides are structurally similar to melatonin and that both showed affinity for the melatonin, MT2 receptors, that can potentially affect glucose homeostasis and insulin secretion," said Marina Popevska-Gorevski, who worked in Dubocovich's lab at UB. "That means that exposure to them could put people at higher risk for diabetes and also affect sleeping patterns," said Popevska-Gorevski.

The results suggest that there is a need to assess environmental chemicals for their ability to disrupt circadian activity. The researchers are developing a rapid bioassay that might be able to assess environmental chemicals for this kind of activity.

"Our approach seamlessly integrates the screening of environmental chemicals through computer simulation, in vitro and in vivo techniques to gauge the risk these chemicals present for various disease end points," said Raj Rajnarayanan, assistant professor of pharmacology and toxicology at UB. The study was published in the journal *Chemical Research in Toxicology*.

Nellore: Centipede found in TTD sambar rice

TTD officials manning the Annadanam canteen were taken aback when Mr Srinivas showed them the insect.



TTD executive officer Dr D. Sambasiva Rao has ordered for a probe into the incident. (Representational image)

Nellore: A devotee from Hyderabad complained on Thursday that he had found a centipede in the sambar rice provided by the TTD at the pilgrim amenities centre-1 in Madhava Guest House in Tirupati.

TTD officials manning the Annadanam canteen were taken aback when Mr Srinivas showed them the insect. Officials said it may have fallen into the vat while sambar was being mixed with rice. TTD executive officer Dr D. Sambasiva Rao has ordered for a probe into the incident.

Move to save Muttar River

Special fund to be formed.



Representational image

KOCHI: Emergency cleaning works will be carried out to save Muttar River, a major tributary of River Periyar, and the drinking water source of thousands of people. Additional district magistrate C.K Prakash directed that a special fund be created to clean the river using the monthly remittance made to the government by industrial units and other commercial firms. The industrial units pay `25 lakh every month to draw water from the river. A suitable proposal will be submitted to the state government.

The river is the major water source of residents of Aluva, Choornikkara, Kalamassery, Kadungaloor, Alangad, Cheranalloor, Varapuzha and parts of Kochi Corporation. During a meeting convened by the ADM on Thursday, it was decided to serve notice, through the Pollution Control Board, to the institutions illegally dumping waste in the river and to request release of water from Bhuthathankettu dam once in 10 days to reduce the salinity level and to remove weeds.

More than six kilometres stretch of the river from Kalamassery to Manjummal Bridge is filled with weeds and water hyacinths. It was also decided to chalk

out a project for de-silting and deepening the river. To prevent leachate from the waste dumping yard of Kalamassery municipality entering the river, a compound wall will be constructed along the rear of the yard. Police patrolling along the river bank will be stepped up to prevent waste dumping and cleaning of vehicles in the river. The meeting was convened based on complaints against pollution and increasing salinity level of the river.

Confusion over Kerala farmers' pension

There is still confusion on the number of farmers who contribute to their welfare fund pension scheme.



Agriculture department officials feel that the farmers can appeal before the government as the finance minister has already informed that a final decision have to be taken at the adalat. (Representational Image)

Thiruvananthapuram: Confusion prevailed on whether the farmers can avail a second pension from Kerala Agricultural Workers Welfare Fund Board apart from the government-sponsored farmers' pension. Finance minister Dr. T. M. Thomas Isaac had said in his budget speech last year that all other pensioners other than physically challenged persons will be eligible for only one pension.

The finance department and the State Finance Commission had launched a process with the help of Kudumbashree Mission to streamline the list of 3.65 lakh pensioners after the LDF government decided to remove those who availed more than one pension. It is estimated that the LDF government's decision to give pension only to those with Aadhaar card eased out more than a lakh farmers from the list.

“We will know who are availing more than one pension once the streamlining process is over,” said an agriculture department official in the rank of additional director. “At present, 90 per cent farmers have their Aadhaar card. The deserving ones will not be left out under no circumstance.” If a farmer is

contributing a specific portion along with the welfare board's contribution then he or she is entitled to get the welfare pension, he said.

However, there is still confusion on the number of farmers who contribute to their welfare fund pension scheme. Agriculture department officials feel that the farmers can appeal before the government as the finance minister has already informed that a final decision have to be taken at the adalat.

THE HINDU

Sounds to keep birds at bay



A solar-powered noisy instrument developed to replace scarecrow and protect crops from birds more effectively

Hyderabad: It is a collaboration between a field academician and a film music director, and their goal is to keep birds and animals at bay from agricultural fields. “The best certification we have received is the fact that farmers are refusing to return the test equipment,” says V. Vasudeva Rao of Jayashankar Telangana State Agriculture University and a key proponent of bio-acoustics.

A 1986 study pegged India's crop loss due to birds at a whopping 55%. Birds and wild animals cause a massive loss to farmers as they consume the crop before and during harvest.

Distress sounds

“We have discovered key distress and alarm sounds that the birds make when they feel threatened as well as predatory sounds. We have captured those sounds and are using them to keep birds at bay. At present we have achieved 89% success rate using call sequence of 17.36 minutes duration of 17 species at 110 Db. Some birds will ignore all sounds when their life is under threat or when they have to feed the chicks — and that is the 11% loss,” says Mr. Rao.

Helping Mr. Rao in this cross-disciplinary field work is music director Seshu K.M.R., who has worked on a number of Telugu movies, including *Ab Tak Chappan-II*. “Birds and animals are intelligent. They can decipher sounds and even remember them, and hence we randomise them using vast library of sounds available to us. We also add geolocation sounds, including breeze, so that the birds are confused,” says Mr. Seshu.

“The ambient sounds that a bird in Adilabad is used to hearing will be different from the one in Medak. And we use a technology called flowsound to ensure natural sounds,” he adds.

Collection of sounds

“The first step in this was collection of sounds, and then we did a sonogram analysis to find the most effective sounds. These sounds were then amplified by Seshu and his team and they added the geolocation information to make it more natural. Each instrument can keep birds at bay on in 15 acres of land,” says Mr. Rao about the solar powered equipment that has a chip containing the sounds which is that are broadcast around feeding time of birds. The current cost of the equipment is ₹30,000 which he and his team are trying to bring down to ₹15,000.

Animal experiments

Can a similar technology be used for animals? “Yes, we tried with monkeys in Khammam and it was effective for seven days. On the eighth day, a monkey came and sat beside the speaker and peered into it,” says Mr. Rao with a laugh. But undeterred, Mr. Rao and his team are now working on bio-acoustics to keep the menace of leopards at bay in areas on the fringes of forests.

Ecosystem favourable for start-ups: Expert

We need to focus on building more incubation centres, says IIM-Ahmedabad Director

The young minds have a lot of ideas on innovation and start-ups, the environment is favourable for start-ups, there are enough mentors and venture capitalists to fund the projects, but what is lacking is good incubation centres where they can give shape to their ideas, said Dr. S. Ravi Shankar, Director and

Mentor of IIM-Ahmedabad's Centre for Innovation Incubation and Entrepreneurship (CIIE).

He was here to deliver a lecture on 'Inspire to innovate' at a three-day seminar that began at the Andhra University College of Engineering for Women on Thursday.

Speaking to *The Hindu*, Dr. Ravi Shankar said the young minds were not short of ideas but it was at the incubation centres that they could give a practical shape and that was missing.

"We need to focus on building more incubation centre," he said.

On the role that he and CIIE play, he said, "We try to infuse ideas by telling stories. The stories can be related to both success and failures. In every story, there will be about two to three ideas, and we expect the students to pick up the threads and develop them. Our module is a combination of education and entertainment."

According to him there are five core elements from where entrepreneurship ideas can be generated: energy, livelihood, agriculture, education and health care.

"If one focuses on these five core elements, he or she can surely come up with at least one or two innovative ideas. Once the idea is generated, the rest falls in place automatically," he said.

Head of the Department of Computer Science D. Lalitha Bhaskari said the three-day seminar was being organised by the CSE Department and would also focus on web security.

A number of topics concerning network and mobile security would be discussed during the three days, she said.

Panel set up over utilisation of Mahanadi waters

The BJP-led government at the Centre has finally acted upon the BJD government's complaint over sharing of the Mahanadi river water between Odisha and neighbouring Chhattisgarh.

Union Ministry of Water Resources, River Development and Ganga Rejuvenation on Thursday constituted a negotiations committee to assess availability and utilisation of waters of Mahanadi and its tributaries.

The committee has been set up with reference to complaint of State of Odisha under section 3 of the Inter-State River Water Dispute Act, 1956 regarding

utilisation of waters of Mahanadi basin. The committee has been asked to submit its report within three months, according to an official release.

The committee will be chaired by Member (Water Planning & Projects), Central Water Commission. It will have 11 other members comprising representatives from the States of Odisha, Chhattisgarh, Madhya Pradesh, Maharashtra and Jharkhand, Union

Ministries of Agriculture, Environment Forest and Climate Change, Water Resources, River Development and Ganga Rejuvenation, India Meteorological Department and Central Water Commission.

Odisha and Chhattisgarh governments have been at loggerheads since July last year after Chief Minister Naveen Patnaik wrote a letter to Prime Minister Narendra Modi that new projects by Chhattisgarh government would hamper water flow into the

Hirakud reservoir, and sought instructions to Central government agencies to protect the interests of Odisha farmers.

Mr. Patnaik had raised concern stating that “illegal actions of Chhattisgarh government in unilaterally planning and constructing projects and barrages in the upper catchment of Mahanadi would spell socio-economic and ecological hazard to our State and its habitants”.

Even though the Chhattisgarh government had denied of having violated any norm, the Mahanadi water dispute has snowballed into a major political issue in Odisha with the BJD trying to draw political mileage in the run up to the panchayat elections in

the State.

The process for the panchayat elections as already started and polling is scheduled to be conducted in five phases from February 13.

After approaching the Centre for constitution of an inter-State tribunal to adjudicate the Mahanadi water dispute,

The Odisha government has also moved the Supreme Court seeking an injunction against Chhattisgarh from continuing with construction of ongoing projects and taking up future projects over the river.

Meanwhile, Mahanadi Peace Initiative, a voluntary initiative by water activists, welcomed the Centre’s decision to constitute a negotiations committee on Mahanadi water dispute.

The committee must comprise of independent experts and not just government representatives, and it must look into water availability and sharing issues with major focus on riparian rights, ecological aspects and climate change threats to to the basin, the Initiative demanded.

The Central committee has been asked to submit its report within three months