

IISER & NIT-R make discovery for wound healing, cancer cure

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Berhampur: Researchers of Indian Institute of Science Education and Research (IISER), Berhampur and National Institute of Technology, Rourkela (NIT-R) have discovered new potential of the cotarnine compound, which would be useful for biomedical applications, especially in wound healing and stopping of bleeding. It would also reduce cost of oral cancer treatment too, researchers have claimed.

The combined study of the researchers of the two leading institutes of the state examined how these compounds interact with human serum albumin (HSA), an important blood protein. "The experiments and computer-based studies have revealed modified compounds bind well with protein without disturbing

its original structure," said Laxmidhar Rout, professor, department of chemical science, IISER Berhampur.

"The derivatives have also shown better antibacterial, wound-healing and haemostatic activities than cotarnine," said Harekrishna Sahu, professor, department of chemical science, NIT Rourkela, who is also involved in the studies.

Details of the study have been published in an article 'Human Serum Albumin Binding with Cotarnine Derivatives and its Haemostatic, Wound-Healing, and Antibacterial Activities: Experimental and Molecular Docking Studies' in the latest edition of 'Molecular Pharmaceutics', an international journal.

Among the derivatives, researchers have found the 2-chlorophenyl derivative has shown the strongest overall performance.

“The research has highlighted how chemical modification can improve naturally derived compounds for future biomedical applications,” said Rout. The study has provided valuable insights into the relationship between molecular structure, protein binding, and therapeutic activity, he added.

Researchers believe that this discovery would certainly reduce the cost of oral cancer treatment. It can also be synthesised on an industrial scale for larger production to meet future needs. Further studies, including detailed structure–activity relationship investigations, pharmacological evaluation, and safety assessment, would be important before their potential clinical applications can be established, the researchers opine.

Rout has thanked Ashok Kumar Ganguli, director, IISER Berhampur, for his continuous support and encouragement towards strengthening research and infrastructure at IISER Berhampur.

Others who were co-authors of the article included Lxmipriya Prusty, Smrutimayee Panda, Seekha Naik, Samadrita Roy, Pradyota Kumar Behera, Devendra Verma and Monalisa Mishra.