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A new invention in engineering the metabolic pathway to hydrocarbons



The new invention by the Scientists at the International Centre for Genetic Engineering and Biotechnology (ICGEB), New Delhi, have succeeded in engineering the metabolic pathway of "Escherichia coli" in such way that it would synthesise hydrocarbons of carbon chain length 14 and 17, which are the fundamental components of diesel. Which would be able to be produced in a sustainable environment, rather better than today, the results were recently published in the journal "Metabolic Engineering".

The process explained as, they first added two genes from Cyanobacteria into the laboratory bacteria. Cyanobacteria are known to produce a low quantity of alkane. So we put the genes for this production into the laboratory bacteria. But then the production was very low. So we took the approach of in-silico metabolic pathway, and finally over-expressed a few genes from E. coli which resulted in significantly high hydrocarbon production,' Fatma, Postdoc researcher and first author of the paper.

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"Currently, most of our need for fuels is met by non-renewable crude petroleum. We have commercialised biodiesel made via transesterification of vegetable oil, but the biodiesel is blended in the proportion of 5-20% with diesel and are not compatible with the existing engines," says Dr Syed Shams Yazdani, from Microbial Engineering group and corresponding author of the paper. "The production is currently only at the lab level.

We have to integrate the engineered plasmid into the genome and go for mass production. We are working to bring about a ten-fold increase in the production and at the same time to bring down the cost of the new product."

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