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Implantable device to regulate insulin in Diabetics

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Singapore: In a bid to provide relief to the millions of insulin injecting patients, bioengineers from Basel have developed new implantable device that can monitor acid build-up in diabetics and produce the necessary amount of insulin. The device is inbuilt with pH sensors that constantly measures blood pH and a gene feedback mechanism that produces the necessary amount of insulin.

People with type I diabetes produce no insulin and are particularly at risk of high acid levels. If the acid build up increases and insulin is not given in time, people can die from metabolic shock due to excess of beta-hydroxybutyrate, an acid which supplies the muscles and brain with energy via the bloodstream.

The devices was constructed from biological components incorporated into cultivated renal cells. These customized cells were further embedded in capsules that can be used as implants in the body. When the pH value drops below 7.35, the device triggers the body to produce insulin. Once blood pH returns to the ideal range, the sensor turns itself off and the reprogrammed cells stop producing insulin.

The device has already been successfully tested in mice with type I diabetes. Scientists said that the results found were remarkable and hormone level in the blood was comparable to that of healthy mice that regulated their insulin levels naturally.