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## RESEARCHERS DEVELOP BATTERIES USING GREEN TEA

 TELECOMMUNICATIONS

### **Wearable electronics like sports bands and smart watches could be more comfortable with the help of a green tea extract.**

Researchers in India have invented a storage device using green tea extract. The device is flexible, compact and rechargeable and can be inserted in wearable electronics including watches and sports bands. Polyphenols, which is an element from green tea, can be charged rapidly and discharged repeatedly – ideal for an energy storage device. Most batteries are made from durable, hard and rigid materials, so this breakthrough could be the start of more flexible energy devices.

The team from India's [Council of Scientific & Industrial Research \(CSIR\)](#) took an interesting approach. The researchers prepared polymer gels in green tea extract, which infuses the gel with polyphenols. The polyphenols converted a silver nitrate solution into a uniform coating of silver nanoparticles. Thin layers of conducting gold and poly (3,4-ethylenedioxythiophene) were then added. It resulted in a device that demonstrated power and energy densities of 2,715 watts per kilogram and 22 watt-hours per kilogram, enough to operate a heart rate monitor, LEDs or a bluetooth module. Researchers also tested the device's durability and found that it performed well even after being compressed more than 100 times.

Similarly to the battery-powered car that was built by Dutch students from [bio-composite materials](#), creating energy from sustainable ingredients could become increasingly popular. It offers an array of global social cause benefits including reducing waste, and additional opportunities such as making wearable devices more comfortable. In the US, a [battery that dissolves in water](#) has been invented which not only adds to the case for sustainability, but could also see additional benefits for the

medical industries. What does this mean for other devices like mobile phones and portable music players? Could this mean the end of electrical appliances in hospitals as we know it?

17th August 2017

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