The World's Second Edible and Rechargeable Battery

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Edible electronics mark the beginning of a new era of medical technology, replacing invasive diagnostic procedures with new applications, which range from non-invasive monitoring of the gastrointestinal tract to early cancer detection. The aim of this study is to develop a fully edible battery to power edible electronics. This research relies on an experiment-based approach, beginning with choosing the right active materials using galvanic cells. The final materials were then tested in a redox-flow model battery. To evaluate the prototype batteries, an oscilloscope was used, measuring the voltage at a current of 0.5 mA. The results show that the final battery, consisting of a standard medication capsule coated in beeswax and using an amino acid and an iron-compound, achieves average a reproducible capacity of 1.5 mAh, a voltage of 0.9 V at a current of 0.5 mA for three hours. Under optimized conditions, a maximum capacity of 3.625 mAh was observed. This exceeds the capacity of the world's first edible battery developed by Italian scientists by 200 to 500 times.

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