Tohoku Univ. Technology

Bioelectric skin patch

Disposable patch that does not require external power source and is expected to have drug penetration and cosmetic effect by iontophoresis

Overview

"Percutaneous administration" which penetrates the drug from the skin surface is utilized for compresses, nicotine patches, etc.. "Iontophotolysis" which accelerates the penetration of the drug by a weak electric current is utilized for high-speed administration of local anesthetics and penetration enhancement of cosmetic ingredients, etc.. However, generation of iontophotolysis requires power and wiring, and is not suitable for personal use at home. Disposable patches that do not require an external power source by using an enzyme-loaded electrode are expected to have drug penetration and cosmetic effects by iontophoresis.

[Effect]

・No need for an external power source for enzymatic bioelectricity generation

・Disposable because only organic materials are used

・High safety because the maximum current is less than 0.5 mA/cm^2

・Enhanced drug penetration confirmed by a study using pig skin

Product Application

- ☐ Patch for wrinkle removal and massage effect
- ☐ Patch for promoting penetration of drugs and beauty ingredients

IP Data

IP No.	:	JP6377385
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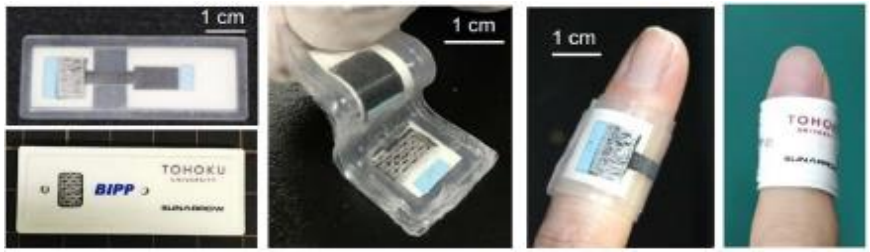
Appearance and Characteristics



		Standard Type	Customization range	
Size	Width	2 cm	2 cm or more	
	Length	5 cm	2 cm or more	
	Thickness	0.2 cm	0.2 cm (Ensuring Flexibility)	
Shape		Rectangle	Square, Round, Crescent moon shape, (for eyes), etc.	
Maximum voltage		0.3 V	0.3～1.2 V	
Transcutaneous current value		30 μA or more	5～80 μA	Low current value can be guaranteed for a long time.
Guaranteed energization time		1 hour	15 minutes to 12 hours	

Related Works

[1] Adv. Healthcare Mater. 4 (2015) 506-510.
[2] ACS Appl. Electron. Mater. 2 (2020) 170-176.
[3] J. Phys. Energy 2 (2020) 044004.
[4] J. Power Cources 546 (2022) 231945.

Contact

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