

財團法人農業科技研究院及合作單位 可移轉技術簡介

技術名稱 Technology Term	以大豆渣開發美白原料 Cosmetic Ingredients Fermented by soybean residue												
技術發明人 Technology Representative	林寅申 Yin-Shen Lin												
技術應用領域 Technology Field	保養品級原料與相關產品 Cosmetic ingredients and products												
技術簡介 Technology Description	<p>利用製備豆漿豆腐過程中剩餘的副產物-大豆渣，加入可食用的微生物發酵後開發具美白功效之美粧原料。本技術利用不同溫度與不同發酵時間調整，取得最適化之發酵方法與條件。發酵液之美白有效成分對酪胺酸酶抑制活性高達 96.68%；在細胞功效的部分，可有效抑制黑色素細胞瘤(B16-F10)生成黑色素，抑制效果優於衛福部公告認可的美白原料-麴酸，抑制強度約為麴酸 5 倍。</p> <p>The aim of the project is to develop cosmetics products from agricultural byproducts, accompanying with waste reduction and safety management. Soybean residue was fermented with edible microorganisms. The fermented broth possessed the stronger anti-tyrosinase activity than kojic acid standard. The cellular melanin content of B16F10 melanoma cells treated with fermentation liquid was significantly reduced.</p>												
技轉相關圖/表	<p>The diagram illustrates the production of soybean residue and soy whey from soybeans. Soybeans are processed into soy milk and then tofu. The by-products are soybean residue and soy whey. Below the diagram is a bar chart showing the melanin content (% of control) for different treatments. The y-axis ranges from 0.00 to 140.00. The x-axis categories are CTL-, CTL+, 發酵液 (0.1 mg/mL), kojic acid (0.5 mg/mL), and kojic acid (0.2 mg/mL). The CTL- bar is at 100.00, CTL+ is at approximately 120.00, 發酵液 (0.1 mg/mL) is at approximately 80.00, kojic acid (0.5 mg/mL) is at approximately 80.00, and kojic acid (0.2 mg/mL) is at approximately 95.00. Asterisks (*) are placed above the 發酵液 and kojic acid (0.5 mg/mL) bars, indicating statistical significance.</p> <table border="1"> <caption>Figure 1: Influence of soybean residue fermentation liquid on B16-F10 melanin production</caption> <thead> <tr> <th>Treatment</th> <th>Melanin content (% of control)</th> </tr> </thead> <tbody> <tr> <td>CTL-</td> <td>100.00</td> </tr> <tr> <td>CTL+</td> <td>~120.00</td> </tr> <tr> <td>發酵液 (0.1 mg/mL)</td> <td>~80.00*</td> </tr> <tr> <td>kojic acid (0.5 mg/mL)</td> <td>~80.00*</td> </tr> <tr> <td>kojic acid (0.2 mg/mL)</td> <td>~95.00</td> </tr> </tbody> </table> <p>圖一、大豆渣發酵液對 B16-F10 黑色素生成之影響</p>	Treatment	Melanin content (% of control)	CTL-	100.00	CTL+	~120.00	發酵液 (0.1 mg/mL)	~80.00*	kojic acid (0.5 mg/mL)	~80.00*	kojic acid (0.2 mg/mL)	~95.00
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	<p>表一、大豆渣以微生物發酵美白有效成份與抑制酪氨酸酶活性分析</p> <table border="1"> <thead> <tr> <th>大豆渣發酵液</th> <th>Day0</th> <th>Day5</th> <th>Day10</th> <th>Day12</th> </tr> </thead> <tbody> <tr> <td>美白有效成份 ($\mu\text{g/ml}$)</td> <td>15.3 \pm 1.3</td> <td>22.5 \pm 2.5</td> <td>127.0 \pm 8.3</td> <td>31.0 \pm 2.1</td> </tr> <tr> <td>酪氨酸酶抑制率 (%)</td> <td>15.71</td> <td>93.09</td> <td>96.68</td> <td>77.14</td> </tr> </tbody> </table>	大豆渣發酵液	Day0	Day5	Day10	Day12	美白有效成份 ($\mu\text{g/ml}$)	15.3 \pm 1.3	22.5 \pm 2.5	127.0 \pm 8.3	31.0 \pm 2.1	酪氨酸酶抑制率 (%)	15.71	93.09	96.68	77.14
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