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「Partial purification of TAHEEBO tea-derived moisture retaining components」

タヒボ茶由来保湿成分の部分精製

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【緒言】
今日、化粧品や除湿剤などの吸湿、保湿成分を含んだ製品が我々の日常生活において幅広く使用されているが、その成分である化学薬品が人体や環境に対し悪影響を与える事が問題視されている。そこで、人体や環境に対して無害でありかつ生分解性をも有すると考えられるタヒボ茶水抽出物の吸湿・保湿性について調べることにした。タヒボ茶水抽出物の吸湿性については宮崎（演題番号：D-07）が実施しているので本研究では保湿性について検討することとした。

【実験方法】
タヒボ茶水抽出物の調製は、宮崎（演題番号：D-07）同様に行なった。タヒボ茶水抽出物4gに蒸留水100mlを加えて30分間撹拌した後、遠心分離器10000rpm、20分）を用いて沈殿物を除去し上澄み液を得た。上澄み液をエタノール沈殿法で処理し遠心分離器にかけ沈殿と上澄み液に分けた。この過程で得られた上澄み液の凍結乾燥末を成分1、沈殿の乾燥粉末を成分2とし相対湿度64.8%のデシケーター及びシリカゲルを含むデシケーターの中での時間経過（2,4,6,8及び24時間後）に伴う各成分の水分残存率を算出して保湿能の指標とした。さらに保湿能のあった成分1をゲルろ過クロマトグラフィー法を用いて分離した。この過程で得られた画分（試験管No6～8、試験官No9～17、試験官No18～27）をそれぞれ成分3、成分4、成分5として同様に保湿試験を行なった。

【結果・考察】
相対湿度64.8%では成分1の水分残存率は時間の経過とともに増加し吸湿性の高いことが示された。一方、成分2では時間の経過とともに減少傾向にあった。また、シリカゲル中では成分1および成分2はともに時間の経過とともに水分残存率は減少傾向を示し、いずれも保湿能が粗標品であるタヒボ茶水抽出物より低下することがわかった。さらに、ゲルろ過クロマトグラフィーにより分離精製した結果、得られた成分3～5の保湿能も低下していた。従って、タヒボ茶水抽出物から保湿成分を分離精製することは保湿能の低下をもたらすため粗標品の状態で利用した方が有効な保湿剤として働くことが明らかとなった。

■English translation

[Introduction]
Today, a wide variety of products containing moisture absorbing or moisture retaining components, such as cosmetics and desiccants, are used in our daily life. However, since these components are chemical compounds, they may adversely affect humans and the environment. Under this circumstance, we decided to investigate the moisture absorption and moisture retention abilities of the water extract of TAHEEBO tea, which is harmless to humans and the environment and is biodegradable. Since the moisture absorbability of the water extract of TAHEEBO tea was studied by Miyazaki (Presentation No.: D-07), we investigated the moisture retention ability of the water extract in the present study.

[Experimental Methods]
The water extract of TAHEEBO tea was prepared according to the method of Miyazaki (Presentation No.: D-07). To 4 g of the water extract of TAHEEBO tea, 100 mL of distilled water was added and then the solution was stirred for 30 minutes and centrifuged at 10000 rpm for 20 minutes to separate out the precipitate. The supernatant obtained was subjected to the ethanol precipitation procedure, and centrifuged to separate the supernatant and precipitate. The lyophilized powder of the supernatant obtained in this process and the dried powder of the precipitate were designated as Component 1 and Component 2, respectively. These components were placed in each of two desiccators (one with relative humidity of 64.8%; the other with silica gel). The time-course profile of the residual water content in each component was obtained by calculating the percentage at 2, 4, 6, 8, and 24 hours, which was used as the index of moisture retention ability. Component 1, which exhibited moisture retention ability, was subjected to the separation process by gel filtration chromatography. The fractions obtained in this process (test tube Nos. 6 to 8, 9 to 17, and 18 to 27) were designated as Component 3, Component 4, and Component 5, respectively, and the moisture retention test was performed in the same manner.

[Results and Discussion]
At the relative humidity of 64.8%, the residual water content in Component 1 increased over time, demonstrating its high moisture absorbability. On the other hand, the residual water content in Component 2 tended to decrease over time. In the silica gel, both in Component 1 and Component 2, the residual water content tended to decrease over time. This result indicates that the moisture retention ability of these components becomes lower than that of the crude sample, the water extract of TAHEEBO tea. In addition, regarding Components 3 to 5, which were obtained after the separation and purification process by gel filtration chromatography, their moisture retention ability were found to be lower. These results demonstrate that, since the separation/purification procedure for the moisture retaining components from the water extract of TAHEEBO tea reduces the moisture retention ability, the water extract of TAHEEBO tea in the crude state can serve as a more effective moisture-retaining agent.