PA-04

「Study on TAHEEBO tea-derived moisture absorbing components」

タヒボ茶由来吸湿成分に関する研究

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【目的】
近年、化粧品に代表されるように吸湿・保湿成分を含んだ製品が幅広く使用されているが、その成分である科学薬品が人体や環境に対して悪影響を与えることが問題視されており、それに代わる新しい吸湿・保湿剤の開発が求められている。
タヒボ茶から水抽出した粉末（タヒボ茶水抽出物）には強い吸湿・保湿能があり生分解性をも兼ね備えていると考えられるため、吸湿・保湿剤への応用が期待されている。今回、我々はタヒボ茶中に含まれる吸湿成分に注目しその部分精製を行なったのでここで報告する。

【実験方法】
１．タヒボ茶水抽出物の調整法
タヒボ茶50gを蒸留水500mlに加え沸騰水中で1時間撹拌抽出し、遠心分離により沈殿と上清に分けた。上清を凍結乾燥した後、得られた茶褐色の粉末をタヒボ水抽出物とした。
２．吸湿成分の部分精製
タヒボ茶水抽出物を蒸留水に溶解後、エタノール沈殿法により高分子化合物を析出させ遠心分離により除去した。エバポレーターを用いて上清中のエタノールを除去した後凍結乾燥した。得られた粉末を蒸留水に溶解しCellulofine GCL-300mカラム（2.5×50cm）に負荷した。展開溶媒には蒸留水を用いた。溶出液はフラクションコレクターで15ml毎に分取し、凍結乾燥後吸湿する画分をSephadex G-25カラム（1.5×50cm）にアプライした。同様に展開後、得られた画分を凍結乾燥した。

【結果】
Cellulofine GCL-300mカラムクロマトグラフィーの結果、2つの画分に吸湿能が検出された。これら両者の吸湿能を比較したところ、先に溶出された画分に強い吸湿能が観察された。強い吸湿能を示す画分をさらにSephadex G-25カラムに負荷したところ6つのグループに分画された。それらの中で一つの画分に強い吸湿能が観察された。Sephadex G-25の分画範囲（100-5000）から考えると、この強い吸湿能を有する画分は低分子量物質である事が示唆された。
従って、タヒボ茶水抽出物には、強い吸湿能を有する低分子量吸湿成分とそれ以外の少なくとも2種類以上の吸湿成分が含まれていることが明らかとなった。

■English translation

[Objectives]
Recently, products containing moisture absorptive and moisture retaining components such as those in cosmetics are in widespread use. However, since these components are chemical compounds, they may adversely affect humans and the environment. For this reason, new moisture absorptive and moisture retaining agents should be developed.
The water-extract powder of TAHEEBO tea (TAHEEBO tea extract) possesses potent moisture absorption and retention abilities and is biodegradable. Therefore, TAHEEBO tea extract is expected to be applied in the development of a moisture absorptive and retaining agent. In the present study, we focused on the moisture absorptive components contained in TAHEEBO tea, and partially purified these compounds.

[Experimental Methods]
1. Preparation of water extract of TAHEEBO tea
TAHEEBO tea (50 g) was extracted by stirring in 500 mL of distilled water for 1 hour in a boiling water bath. The solution obtained was centrifuged to separate the supernatant and precipitate. The supernatant was lyophilized, and the brown powder obtained was used as the water extract of TAHEEBO.
2. Partial purification of moisture absorptive components
The TAHEEBO tea extract was dissolved in distilled water. By the ethanol precipitation method, high-molecular weight compounds were precipitated, and the precipitate was separated out by centrifugation. Using an evaporator, ethanol was removed from the supernatant, and the obtained solution was lyophilized. The powder obtained was dissolved in distilled water, and the solution was applied to Cellulofine GCL-300m Column (2.5 ×50 cm). Distilled water was used as an elution solution. The eluate was collected by 15-mL fraction with a fraction collector. The fractions showing moisture absorbability after the lyophilization process were applied to Sephadex G-25 Column (1.5×50 cm). In the development process was carried out in the same manner, and the fraction obtained was lyophilized.

[Results]
As a result of the column chromatography using the Cellulofine GCL-300m, absorbability was observed in two fractions. Comparison in moisture absorbability between these fractions revealed that the fraction eluted earlier had higher absorbability. This fraction was further applied to Sephadex G-25 Column, and was fractionated into 6 subfractions. One of these fractions showed higher absorbability. Considering the fractionation range (100 to 5000) of Sephadex G-25 Column, the fraction showing moisture absorbability is likely to be a low-molecular weight substance.
This study confirmed that the TAHEEBO tea extract contains at least two types of absorptive components, one of which is a low-molecular weight absorptive component that has potent absorbability.