第50回 日本癌学会総会

■1991年9月10日～12日　東京都

289.木pmL

「Effects of antitumor promoters contained in medicinal plants from South America」

南米産薬用植物に含まれる抗発癌プロモーターの効果

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前回の本学会において我々は、その生体における効果としての有用性から、主に飲料用（茶）として用いられている南米産のタベブイア属植物の一種（Tabebuia avellanedae）の抽出物、ならびにそれより誘導された植物培養細胞の産生する部分について、発癌予防の観点から抗発癌プロモーター活性に関する報告を行った。

今回は、その植物試料より抗発癌プロモーター活性を有する化合物の分析を目的として、その検討を行った。効果を示した粗抽出物から単離を進めたところ、抗発癌プロモーター活性を有する化合物として、ナフトキノン系化合物である。lapacholおよびCompound。を得た。これら化合物は、in vitroにおけるEpstein-Barrウイルス（EBV）活性化抑制試験ならびにin vivoのマウス皮膚発癌二段階試験においても顕著な抑制効果を示したことで、飲料用として用いられていることから、この植物の示す生理活性としてその有用性を示唆するものである。

1）南米において主に飲料用としてその樹皮を用いるタベブイア属植物（Tabebuia avellanedae）について、その抽出物に抗発癌プロモーターとしての活性を検討するため、EBV活性化抑制試験を行ったところ顕著な抑制効果を認めた。
2）上記の植物について、有効成分を長期間、安定して得ることを目的にその植物のカルス化を行い、その生産物についても同様の試験をしたところ、同じく抑制効果が認められた。
3）1、2、において得られた抽出物より化合物の単離を進めたところ、抗発癌プロモーター活性を示す化合物として、ナフトキノン系のlapachol、Compound Ⅰの2種の化合物を得た。これらの化合物は、in vivoのマウス皮膚発癌二段階試験でも、TPAに対して強い発癌プロモーションの抑制を示すことから、この植物に抗発癌プロモーター活性を有する物質の存在が認められた。

■English translation

In the Japanese Cancer Association (JCA) conference held last year, we reported about the antitumor promoter activity from the viewpoint of cancer prevention, using extracts from a Tabebuia plant (Tabebuia avellanedae) from South America, which is used in making beverages (as a tea), and the products from the cultured cells that was derived from the plant, because the plant is considered to have a useful in vivo effect.

This time, using the plant samples, the investigation was conducted aiming at analyzing the plant compounds that have the antitumor-promoting activity. Through the isolation process from the crude extract showing the effect, lapachol and Compound I, both of which are naphthoquinone compounds, were obtained as compounds possessing an antitumor-promoting activity. These compounds showed a prominent inhibitory effect in both of the in vitro Epstein-Barr virus (EBV) activation inhibition test and the in vivo two-stage carcinogenesis test on mouse skin. This result suggests the usefulness of the bioactivity of this plant, together with the fact that the plant has been used in making beverages.

1) Using the extract of a Tabebuia plant (Tabebuia avellanedae), of which inner bark has been used in making beverages in South America, the EBV activation inhibition test was conducted to assess its activity as an antitumor promoter. The result showed a prominent inhibitory effect.
2) On the plant mentioned above, callus induction was conducted aiming at constantly obtaining the active components over a prolonged period of time. The products from the callus cells were subjected to the same tests, and were found to have the inhibitory activity.
3) Through the process in which compounds were isolated from the extracts obtained in Steps 1) and 2), two types of naphthoquinone compound (lapachol and Compound I) were obtained as those possessing an antitumor-promoting activity. These compounds showed a prominent inhibitory effect against TPA also in the in vivo two-stage carcinogenesis test on mouse skin. This result demonstrates the presence of substances possessing an antitumor-promoting activity in this plant.

第36回 日本リウマチ学会

■1992年5月26日～28日　千葉県

36th Japan College of Rheumatology

「The effect of department TABEBUIA from South America of NOUZENKAZURA to MRL/1 mouse which carries out natural development of symptoms of the pathological change of SLE and RA」

SLEとRAの病変を自然発症するMRL/1マウスに対する南米産ノウゼンカズラ科タベブイア属植物の効果

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【目的】
SLEとRAは、ステロイド、免疫抑制剤等が有効であるが、長期使用では副作用が問題となり、長期に使用出来る薬剤が望まれる。今回、南米産ノウゼンカズラ科Tabebuia属植物「タヒボ」（Ta）について検討した。

【方法】
MRL/1マウス（雄性6週齢）6例にTa 8gを水1500mlにて煮沸抽出液を経口投与（Ta群）し対照群（c群）と14週後体重、腎、脾および肝重量、抗核抗体、抗Sm抗体、RA因子の測定と腎組織を、さらに各群10例にTa投与8週後の尿所見も比較検討した。

【結果】
Ta群はC群より体重は増加傾向、腎重量は有意に増加し、肝、脾重量は差を認めなかった。血清検査は有意差を認めず。腎組織は光顕では両群で著明な差はなかったが、螢光では対照群に見られたIgG,IgM,C3の係蹄壁とメサンジウム領域での沈着がTa群ではメサンジウム領域に認められたのみであった。一日尿蛋白量はTa群で有意な減少を認めた。

【結論】
MRL/1マウスに対して、Taは何等かの抗炎症効果と免疫調節作用を有することが示唆された。

■English translation

[Purpose]
Steroids and immunosuppressants, etc., are effective in treating SLE and RA, but side effects are a problem with extended use and pharmaceuticals that can be used long-term are in demand. We thus examined "taheebo" (hereinafter referred to as "Ta"), a Bignoniaceae (family) Tabebuia (genus) plant from South America, to that end.

[Method]
8g of Ta was boiling extracted in 1500ml of water and administered orally to six MRL/1 mice (6-week old males) (hereinafter referred to as the "Ta Group"). A comparative study with the control group (hereinafter referred to as the "C Group") was made 14 weeks later in regard to body weight, kidney, spleen and liver weight, anti-nuclear antibodies, anti-Smith antibodies and RA factor measurements as well as on kidney tissue. Urinary findings were also compared in 10 subjects from each group 8 weeks after administration of Ta.

[Results]
The tendency for an increase in body weight was greater in the Ta Group than in the C Group, and their kidney weight also increased significantly, but no difference in liver and spleen weight was observed. Serology test results displayed no significant differences. There was no marked difference in the kidney tissue of the two groups under light microscopy, but, under fluorescent lighting, the deposits of IgG, IgM and C3 seen in the loop wall and mesangial areas in the C Group were only observed in the mesangial areas with the Ta Group. A significant reduction in the daily level of urine protein was also observed in the Ta Group.

[Conclusion]
This study suggested that Ta has some anti-inflammatory and the immunoregulatory effect on MRL/1 mice.