Ⅱ-4

지방세포 분화 및 지방축적 억제 활성 약용식물의 탐색

세명대학교 : 정용준, 김현우, 양윤정, 김효원, 김현준, 이진주, 조시은, 김주연, 강세찬*

Investigation on Medicinal Plants as a Source of New Preadipocyte Differentiation and Adipogenesis Suppression

Department of Natural Medicine Resources, Semyung University, Jecheon, 309-711, Korea

Yong-Joon Cheong, Hyun-Woo Kim, Yoon-Jeong Yang, Hyo-Won Kim, Hyun-Joon Kim, Jin-Ju Lee, Si-Eun Cho, Joo-Yeon Kim, Se-Chan Kang*

실험목적(Objectives)

Obesity is a direct health risk, moreover it unquestionably increases the risk of other diseases including coronary artery disease, diabetes, hypertention, certain cancers and premature mortality. 3T3-L1 preadipocyte has a property of differentiation in selected condition and is used for anti-obesity screening model. Therefore, we carried out screening on medicinal plants inhibit the differentiation into adipocyte and the adipogenesis using this 3T3-L1 preadipocyte.

재료 및 방법 (Materials and Methods)

○ 실험재료

A total of 181 medicinal plants (50% EtOH extracts) were purchased form Plant Extract Bank of Korea (DaeJeon, Korea) and 3T3-L1 (preadipocyte) cell line was obtained from American Type Culture Colletion (ATCC, USA).

○ 실험방법

Total 181 kinds of medicinal plant extracts were screened at single dose of 50 ㎍/ml and the 8 kinds of extracts were selected because of their high activities. The 8 kinds of extracts were investigated by various concentrations and the 6 kinds of extracts were re-selected. These medicinal plant (*Curcuma aromatica, Curcuma longga, Diospyros kaki, Hedyotis diffusa, Quercus serrata* and *Saussurea lappa*) were extracted with 50% EtOH and fractionated by polarity in sequence of hexane, chloroform, ethyl acetate, butanol and water. These fraction were evaluated the suppression level of adipocyte differentiation and adipogenesis.

주저자 연락처 : 강세찬 E-mail : sckang@semyung.ac.kr Tel : 010-8950-1273

실험결과 (Results)

As a result, ethyl acetate fraction from *D. kaki* showed high suppression level of adipocyte differentiation and adipogenesis, respectively (EC_{50} = 17.23 ㎍/ml and 38.65 ㎍/ml). In conclusion, we suggest that these selected medicinal plant have a anit-obesity activity and might offer a possiblity of drug development.

Table 1. Inhibitory effects of solvent layers of screened medicinal plants on the preadipocyte differentiation.

Scientific Name (Part)	Hexane	Chloroform	EtOAc	BuOH	Water
Curcuma aromatica (Rhizoma)	32.39†	79.28	>100	>100	>100
Curcuma longga L.(Rhizoma)	27.22	81.05	>100	>100	>100
Diospyros kaki (Folium)	>100	>100	17.23	>100	>100
Hedyotis diffusa (Herba)	28.63	48.11	>100	94.24	>100
Quercus serrata (Folium)	>100	>100	83.56	>100	>100
Saussurea lappa (Radix)	>100	88.64	19.15	>100	>100

† EC_{50} (㎍/ml)

Table 2. Inhibitory effects of solvent layers of screened medicinal plants on the adipogenesis.

Scientific Name (Part)	Hexane	Chloroform	EtOAc	BuOH	Water
Curcuma aromatica (Rhizoma)	87.88†	>100	>100	>100	>100
Curcuma longga L.(Rhizoma)	82.43	>100	>100	>100	>100
Diospyros kaki (Folium)	>100	>100	38.65	>100	>100
Hedyotis diffusa (Herba)	>100	>100	>100	>100	>100
Quercus serrata (Folium)	>100	>100	>100	>100	>100
Saussurea lappa (Radix)	>100	>100	61.31	>100	>100

† EC_{50} (㎍/ml)

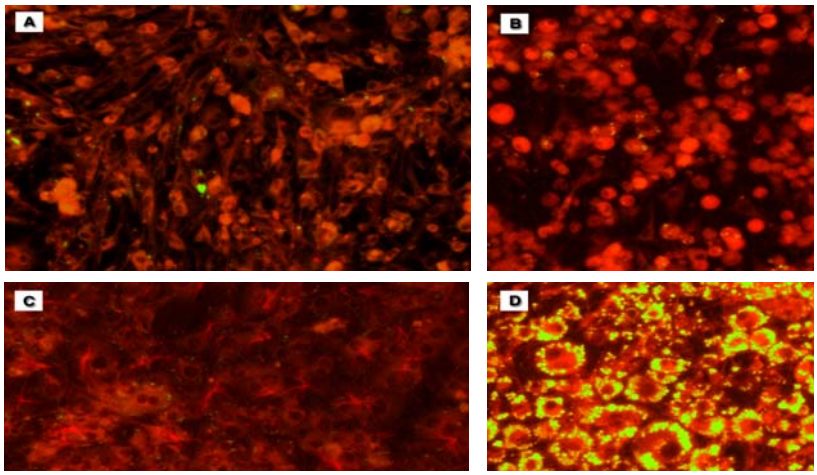

Fig 1. Inhibitory effect of *Diospyros kaki* on the preadipocyte differentiation and adipogenesis. A, Inhibition of differentiation; B, Inhibition of adipogenesis; C, Undifferentiatied; D, Differentiatied.