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Butein 이 세포사멸과 세포주기조절 및 혈관생성에 미치는 기작 규명

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국 문 초 록

이번 연구에서는 율나무유래 물질인 butein 이 인체암세포의 성장과 세포주기 조절 및 혈관생성에 미치는 영향과 그 기전에 대하여 조사하였다.

Butein 의 처리는 Tumor necrosis factor (TNF)-related apoptosis-inducing ligand (TRAIL)이 매개하는 암세포의 사멸에 강력한 상승효과를 유도하였다. 이러한 결과는 Sp1 전사 인자의 활성화를 통한 Death Receptor5 (DR5)의 발현 증가에 의한 것으로 밝혀졌다. 또한 butein 의 처리는 암세포에서 항시적으로 발현이 높은 것으로 보고되어있는 전사인자인 NF- κ B 의 활성을 저해하여 암세포의 이동과 침윤에 관계하는 MMP-9 의 활성을 억제하였고 또한, 혈관생성인자인 VEGF 의 발현을 억제시켜 항혈관생성 효과를 보였다. 뿐만 아니라 butein 의 처리는 대부분의 체세포에서는 발현이 되지 않지만 암세포의 불멸에 핵심적인 역할을 수행하고 있는 단백질인 telomerase 의 활성과 발현을 저해하는 것으로 조사되었다. 마지막으로 butein 은 세포 내에서 ROS 생성을 유도하여 Chk1 과 Chk2 의 활성을 통한 G₂/M 기의 arrest 를 유도하였다. 이상에서의 연구결과를 토대로 butein은 암세포주를 이용한 실험에서 효과적인 항암효과를 나타냄을 확인할 수 있었으며, 암 예방 및 암 치료제의 개발에 있어 후보물질로서의 가능성을 가지고 있는 것으로 사료된다.