Format: Abstract

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Cannabinoids inhibit human keratinocyte proliferation through a non-CB1/CB2 mechanism and have a potential therapeutic value in the treatment of psoriasis.

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Abstract

BACKGROUND: Cannabinoids from **cannabis** (**Cannabis sativa**) are anti-inflammatory and have inhibitory effects on the proliferation of a number of tumorigenic cell lines, some of which are mediated via cannabinoid receptors. Cannabinoid (CB) receptors are present in human skin and anandamide, an endogenous CB receptor ligand, inhibits epidermal keratinocyte differentiation. Psoriasis is an inflammatory disease also characterised in part by epidermal keratinocyte hyper-proliferation.

OBJECTIVE: We investigated the **plant** cannabinoids Delta-9 tetrahydrocannabinol, **cannabidiol**, cannabinol and cannabigerol for their ability to inhibit the proliferation of a hyper-proliferating human keratinocyte cell line and for any involvement of cannabinoid receptors.

METHODS: A keratinocyte proliferation assay was used to assess the effect of treatment with cannabinoids. Cell integrity and metabolic competence confirmed using lactate-dehydrogenase and adenosine tri-phosphate assays. To determine the involvement of the receptors, specific agonist and antagonist were used in conjunction with some phytocannabinoids. Western blot and RT-PCR analysis confirmed presence of CB1 and CB2 receptors.

RESULTS: The cannabinoids tested all inhibited keratinocyte proliferation in a concentration-dependent manner. The selective CB2 receptor agonists JWH015 and BML190 elicited only partial inhibition, the non-selective CB agonist HU210 produced a concentration-dependent response, the activity of theses agonists were not blocked by either CB1/CB2 antagonists.

CONCLUSION: The results indicate that while CB receptors may have a circumstantial role in keratinocyte proliferation, they do not contribute significantly to this process. Our results show that cannabinoids inhibit keratinocyte proliferation, and therefore support a potential role for cannabinoids in the treatment of psoriasis.

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