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Bioactivity directed HPTLC & GLC based phytochemical profiling of *Crotolaria juncia* Linn.Seeds

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Abstract

Although, the efficacy of herbal drugs has never been in question but the quality has always been a matter of debate due to their complex chemical nature. The seeds of *Crotolaria juncia* Linn. plant are reported to possess anti-inflammatory, anti-ulcerogenic and anti-microbial activities. In a typical bioactivity directed phytochemical profiling, crushed seeds were subjected to successive petroleum ether and ethanol extraction. The extractives were evaluated for their possible use in treatment of inflammatory disorder i.e. psoriasis. The effect of extractives on abnormal proliferation and differentiation of basal keratinocytes, reduction in inflammation, restoring the anti-oxidant defense mechanism and reduction in triggering factor (anti bacterial activity) were evaluated by established *in vivo* and *in vitro* methods.

The petroleum ether extract of seeds (CJPE) of the plant displayed pronounce inhibitory effect (over 68% fall) on accumulation of NO level in isolated macrophages (*in vitro* Study) in 500 µg concentration. Significant reductions, comparable to diclofenac sodium used as standard, in carageenan induced edema (64.05±0.053% in 200mg/kg dose at 6 hr) and granuloma formation (48.55±0.244% in 200mg/kg oral dose on 6^{th} day) were observed in *in vivo* models. CJPE also showed good antioxidant activity with IC_{50} values of 133.99, 286.409 and 31.6 µg/ml for DPPH, OH and super oxide free radicals respectably. Further, it inhibited the proliferation of skin keratinocytes (HaCaT cell line) in concentration dependent manner with IC_{50} value of 45.45 µg/ml. The extract was able to lower NO concentration and inhibit lipid per oxidation which may be attributed to anti proliferative activity. The high content of unsaturated fatty acids viz. linoleic (62%),palmitic ,steric and oleic acid as determined by GLC may act as substrate for free radicals and hence responsible for the anti oxidant activity.

The ethanol extract of the seeds (CJEE) was found to be rich in phenolics and alkaloids. Two flavonoids, qucertin and rutin isolated from extract were used as markers to standardize it by HPTLC.CJEE contained 0.08 and 0.04% w/w of qucertin and rutin respectively. It also exhibited dose dependent anti inflammatory activity in selected models. However, the free radical scavenging and the anti proliferative activities of the extract were not as pronounced as CJPE. Both the extractives showed moderate to good anti bacterial activity against selected bacteria. The details of related findings will be presented.