ABSTRACT

*Artemisia amygdalina* Decne and *Gentiana kurroo* Royle are important medicinal plants belonging to two different plant families. These two plants were worked out for the evaluation of their anti-inflammatory potential. Carrageenin induced paw edema model was used for screening of different extracts of these plants against acute inflammation. In both plants methanolic extract showed maximum potential in inhibition of paw edema. These extracts were also studied in humoral and cellular immune models, where again, the most bioactive fraction found was methanolic extract in both plants. So methanolic extracts were studied in detail for dose dependent effect in acute and chronic inflammation *in vivo*. Humoral and cellular immune models were used for observing the effect of methanolic extracts from both plants against the humoral and cell mediated immunity. *In vitro* study was also carried out using LPS stimulated peritoneal macrophages and splenocytes isolated from immunized Balb/C mice. These cells were cultured in presence of different concentrations of methanolic extracts and taking betamethasone as standard drug. The supernatants obtained from the culture of LPS stimulated macrophages were analysed for TNF-α, NO and IL-6 concentrations. NF-κB was quantified from the pelleted macrophages by western blotting using anti-NF-κB antibodies. These methanolic extracts were further characterised using LC-ESI-MS/MS. The results obtained from these studies showed anti-inflammatory potential in methanolic extract of these plants. These extracts decreased edema formation in both acute and chronic inflammation in a dose dependent manner. Both the humoral and cell mediated immune responses were suppressed in extract treated animals *in vivo*. The immune suppression by these extracts was further seen by checking serum TNF-α level in animals of these immune models. Again the extract treated animals had decreased serum TNF-α level as compared to untreated animals. The results from *in vitro* study
showed inhibitory potential of methanolic extracts against TNF-α, NO and IL-6 production in LPS stimulated macrophages. Also, NF-κB expression in macrophages was less in presence of methanolic extracts as compared to vehicle. These effects were dose dependent. In splenocyte proliferation assay, these extracts inhibited B and T-cell proliferation dose dependently.

From these results it was concluded that methanolic extracts from both plants showed anti-inflammatory potential by inhibiting the pro-inflammatory mediators and effectors. Further, these extracts suppressed immune system and thus the effect against inflammation. The methanolic extract of Gentiana kurroo showed higher potential against inflammation than methanolic extract of Artemisia amygdalina. LC-MS analysis of Artemisia amygdalina showed the presence of compounds from terpenes and flavones in it, while the LC-MS analysis of Gentiana kurroo showed presence of glycosides and flavonoids.