3. Aims and objectives

Since asthma is a chronic airway inflammatory disorder, an emphasis is given to screen bioactive compounds of *Achillea millefolium*, *Rubia cordifolia* and *Saussurea lappa* for asthma was the primary aim of study planned. Literature review revealed that most of these medicinal plants possess anti-inflammatory activity because of flavonoids, glycosides, triterpenoids, and sesquiterpenes as bioactive compounds and literature recommends evaluation of above mentioned plants for their therapeutic efficacy in asthma.

As it is well established that inflammation and immunomodulation are the key etiological factors for the precipitation of asthma, therefore, the basis for selection of the plant was, whether they possess these activities or not. 1). *Achillea millefolium* is known to contain bioactive principle triterpenes and sesquiterpenes, which are reported to modulate histamine, bradykinin, matrix metalloproteinases (MMPs), and interleukins (ILs). These chemokines play a key role in management of inflammation; therefore, *A. millefolium* was selected for its possible role in treatment in asthma. 2). *Rubia cordifolia* contains major constituents as anthraquinone glycosides which are known to possess antioxidant, anti-platelet activating factor (PAF) and anti-leukotrienes (LTs) activities which are involved in asthma. 3). The plant *Saussurea lappa* is a rich source of sesquiterpene lactones which are reported to modulate inflammatory markers such as inducible nitric oxide synthase (iNOS), tumor necrosis factor (TNF-α) and nuclear factor (NF-κB). Since inflammation is said to have a critical role in pathogenesis of asthma, *Saussurea lappa* was investigated for its possible cure.

On this basis, study has been designed to evaluate and compare therapeutic efficacy of individual bioactive isolated compounds and their combination.

The objectives of the present study are:

1. Collection and authentication of plant drugs *viz.* *Achillea millefolium*, *Rubia cordifolia* and *Saussurea lappa*.
2. Extraction, isolation and characterization of individual bioactive compounds from *Achillea millefolium*, *Rubia cordifolia* and *Saussurea lappa*.
3. Screening of individual bioactive compounds for spasmolytic activity using tracheal strip preparation (*in-vitro*) from Wistar albino rats.
4. *In-vivo* screening of most active compounds (from *in-vitro* studies) for bronchospasmolytic activity in *Wistar* albino rats.