3. Need of work

Most commonly used NSAIDs and COX-2 inhibitors in RA treatment are ibuprofen, etoricoxib, nabumetone and naproxen. *Andrographis paniculata* (Acanthacae) is a frequently used herb in Ayurvedic formulations having anti-inflammatory properties. Andrographolide is one of the active constituent of *Andrographis paniculata Nees* (AP) and has been reported to have antiarthritic effect. Several anti-inflammatory and anti-arthritic polyherbal formulations consisting *Andrographis Paniculata* as a major ingredient are available in local Indian markets.

In treatment of arthritis it is common practice that, along with the DMARDs and NSAIDs, herbal formulations are either taken with or without knowledge of health care provider by the patients for better therapeutic effects. Herb-drug interactions may result in various synergistic/beneficial as well as antagonistic/undesirable effects.

Etoricoxib (ETO), nabumetone (NAB) and naproxen (NP) belongs to class of NSAIDs, widely used in the treatment of rheumatoid arthritis for mild to moderate pain relief. Many studies have been reported previously for pharmacokinetic and pharmacodynamic interaction between few herbs and conventional drugs. Unfortunately, not a single attempt has been done to investigate pharmacokinetic and pharmacodynamic interaction of AP and it’s one of the major constituent AN with ETO, NAB and NP after oral administration in rats.

Previously various analytical and bioanalytical methods were reported in literature for the determination of andrographolide alone and in combination with other drugs. Similarly, seldom analytical and bioanalytical methods were previously reported in literature for the determination of ETO, NAB and NP. However, no analytical method was available for simultaneous estimation of AN with ETO/NAB/NP.

So there was a need to develop a new validated HPLC method for simultaneous determination of AN with ETO/NAB/NP in rat plasma and application of the developed method for pharmacokinetic study in rats. Investigation of the possible herb-drug interactions of these compounds through comparing their pharmacokinetic profiles after oral administration in rats was needed. Study of single and combined effects of these drugs on
pharmacodynamic profiles in FCA induced rheumatoid arthritis in rats should be evaluated and compared to support the pharmacokinetic interaction.

So to avoid any possible herb-drug interaction, investigation of pharmacokinetic and pharmacodynamic effects on co-administration of AN and APE with ETO, NAB and NP would be needed.