

CONCLUSION

- Pharmacognostical evaluation of the roots of *A. dichotoma* performed in the present study that will be beneficial in developing a standard monographs and will also play a key role in establishing the identity and authenticity of plant material.
- Qualitative and quantitative phytochemical studies of EAD revealed that the majority of phytoconstituents are polyphenolics (phenolics and tannins) and flavanoids, present in ethanolic root extract of *A.dichotoma*.
- The presence of fatty acid components in petroleum ether fraction of roots of *A. dichotoma* were also identified and quantified by GC–FID. Ursolic acid and beta-sitosterol is also isolated from this fraction.
- HPTLC fingerprinting of ethanolic root extract of *A. dichotoma* and their bioactive fractions PF and CF showed the presence of kaempferol, quercetin, ursolic acid, beta-sitosterol and lupeol which was confirmed with the help of R_f value and spectral comparison by using standards and were quantified in EAD, PF and CF. The phytochemical standardization of *A. dichotoma* using HPTLC revealed the presence of quercetin (3.86%), ursolic acid (1.63%), and lupeol (5.81%) as a major phytoconstituent.
- This study also depicted a potent *in vitro* antioxidant activity of ethanolic root extract of *A. dichotoma* which may be attributed to the significant presence of phenols, tannins, and flavonoids.
- Pharmacological evaluation revealed that *A. dichotoma* showed significant anti-ulcer activity in both the physical and chemical induced gastric

ulceration. The anti ulcer activity was endorsed to its offensive property, mainly anti secretory effect due to H^+K^+ -ATPase inhibitory activity and also by acting as effective antioxidant. Furthermore, the isolated ursolic acid from the petroleum ether fraction of *A. dichotoma* root also showed significant anti ulcer activity by acting on offensive mechanism.

- The study confirmed the anti nociceptive, anti inflammatory and anti arthritic activities of ethanolic root extract (EAD), petroleum ether fraction (PF) and chloroform fraction (CF) in dose dependent manner and EAD (400 mg/kg, *p.o.*) was more potent than the curcumin. EAD, PF and CF reduced the hind paw swelling, arthritis index. The anti-arthritic activity is associated with the ankle histopathological changes, down regulation of cytokine level and radiographic analysis. Due to decrease in spleen index EAD and PF at higher dose can be regarded as an immune modulatory drug in RA.
- The study demonstrates that mainly EAD and PF showed significant anti-urolithic activity in dose dependent manner while CF and BF possessed lesser action as compared to standard drug cystone. The mechanism underlying this effect is still unknown but the possible mode of action includes increased diuresis, lowering the urinary concentration of stone forming salts and prevent the super saturation of the crystallizing salts, decreasing the crystal size and restore normal kidney architecture by reducing the renal tissue injury. Further, studies are required to illuminate the chemical constituents and mechanism liable for pharmacological activities.

- Thus, the present finding scientifically confirms the traditional use of *A. dichotoma* in the treatment of gastric ulcer, pain, inflammation, arthritis and urolithiasis.