Abstract

This thesis comprises five chapters. The first one is an introduction which comprises of a brief survey on pharmacological view of inflammation and different drugs used for treatment of inflammation. It also gives different methods for synthesis of new NSAIDs containing pyrazoline, pyrazole or imidazole ring and their anti-inflammatory activity.

The second chapter deals with aim of the work and schemes that have been carried out to obtain the new target pyrazoline, pyrazole and imidazole compounds.

The third chapter explains the theoretical discussion of the experimental work for the preparation of starting materials **Ia-f, IIIa-h, V, VIII** and synthesis of new target compounds **IVa-p, VIa-f, IXa-g, Xa-g.**

Compounds **IVa-p** were prepared *via* Clasien Schemdit condensation of certain chalcones **IIIa-h** with either *p*-hydrazinylbenzoic acid (**Id**) or *p*-hydrazinylbenzene sulfonamide (**If**).

Also, compounds **VIa-f** were synthesized by cyclization of enamine derivative **V** with different phenylhydrazine derivatives **Ia-f**.

In addition, reacting benzamidoacetic acid **VIII** with different aromatic aldehyde in acetic anhydride containing catalytic amount of sodium acetate affords oxazolone compounds **IXa-g**, which were further condensed with sufanilamide in glacial acetic acid to give imidazoline compounds **Xa-g**.

The fourth chapter consists of experimental part of this work which contains the detailed procedures used for synthesis of the starting

materials **Ia-f, IIIa-h, VI, VIII** in addition to the final target compounds **IVa-p, VIa-f, IXa-g, Xa-g.**

Additionally, the detailed data obtained from elemental and spectral analyses as well as the physical properties of the synthesized compounds is given in this chapter. It also gives an observation on both *in vitro* COX-1 & COX-2 activity and *in vivo* anti-inflammatory activity of all synthesized compounds compared with celecoxib as standard anti-inflammatory agent. Finally, this chapter clarifies the ulcerogenic liability of the most active pyrazoline compounds (**IVg, IVj & IVo**) with standard drug celecoxib & indomethacin. The result showed that, the compounds were less ulcerogenic than indomethacin and comparable with that of celecoxib.

The fifth chapter includes 151 references from 1985 to 2015.