SYNTHESIS OF NEW PYRROLE DERIVATIVES ON THE BASIS OF PYRROLE-2-CARBOXALDEHYDE

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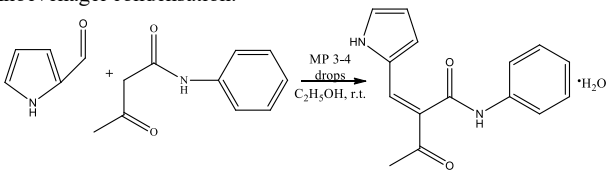
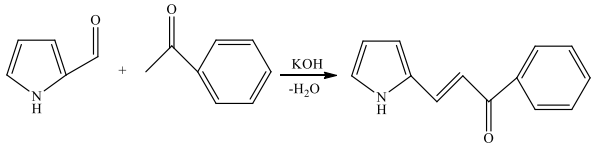
Compounds containing heterocyclic and carbocyclic aromatic systems are the significant compounds in organic chemistry. Recent years, the application of five and six-membered heterocycles has been expanded in different areas of chemistry like coordination chemistry, drug design and development and material science. The pyrrole scaffold is the most essential five-membered heteroaromatic ring system between the nitrogen heterocycles. Pyrrole is important structural part of porphyrin rings which act as a key moiety of many natural compounds as heme and related cofactors (chlorophyll *a*, heme *b*, vitamin B_{12}, factor 430) and other bioactive molecules such as porphobilinogen, nargenicin and prodigiosin. Different pharmacophores active compounds, such as elopiprazole, lorpiprazole, isamoltane, obatoclax contain pyrrole ring system.

Various transformations of pyrrole aldehydes have been carried out to synthesize functionalized pyrrole derivatives. (2*Z*)-3-oxo-*N*-phenyl-2-[(1*H*-pyrrole-2-yl)methylidene]butanamide was obtained from the reaction of pyrrole-2-carboxaldehyde and acetoacetanilide on the basis of Knoevenagel condensation.



Scheme 1. Reaction scheme of synthesis
of (2*Z*)-3-oxo-*N*-phenyl-2-[(1*H*-pyrrole-2-yl) methylidene] butanamide

Other main scaffold for the synthesis of new pyrrole derivatives is (2*E*)-1-phenyl-3-(1*H*-pyrrole-2-yl)prop-2-en-1-one was synthesised from the reaction between pyrrole-2-carboxialdehyde and acetophenone. Reaction proceed by the Claisen-Schmidt condensation mechanism.



Scheme 2. Reaction scheme of synthesis
of (2*E*)-1-phenyl-3-(1*H*-pyrrole-2-yl)prop-2-en-1-one

The structure of synthesized new compounds were detected by ^{1}H and ^{12}C-NMR and X-ray spectroscopy methods.