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Several new 4H-pyrano[2,3-h]coumarines 5a-e were prepared by the reaction of 7-hydroxy-coumarine with cinnamonic nitriles 1. Also, the reaction of 7-hydroxy-coumarine with a mixture of aliphatic aldehydes and malononitrile afforded compounds 5f,g. Similarly, 4-hydroxycoumarine was reacted with the same reagents to give compounds 9a-g. The reaction of 9 g with different nucleophilic reagents afforded the pyrimido[4',5':6,5]pyrano[3,2-c]coumarin-4-one derivatives 10–12, 4-methyl-2-(ethoxymethylenamino)-4H-pyrano[3,2-c]coumarine-3-carbonitrile (13) and pyrazolo[3',4':6,5]pyrano[3,2-c]coumarine (14) respectively.