ABSTRACT

Various chalcone derivatives (MDA1 to MDA8) were synthesized from the intermediate, 3-acetyl-6-methyl-4-[4-(4-methylpiperazin1-yl)butoxy)]-2*H*-pyran-2-one using different aromatic aldehydes by Claisen Schmidt condensation reaction at 0-5°C. This intermediate was obtained from 3-acetyl-4-hydroxy-6-methyl-3,4-dihydro-2*H*-pyran-2-one by treatment with 1,4-dibromobutane in presence of basic catalyst followed by heating with N-methylpiperazine. The synthesized compounds were confirmed by IR, ^{1}H NMR and Mass spectral data. All title compounds were investigated for the *in-vivo* anticancer activity by using Ehrlich ascites carcinoma cells and *in-vitro* antimicrobial activity against Gram negative and Gram positive bacteria. Compounds MDA4, MDA5, MDA6 and MDA7 with electron releasing groups like $–OCH_3$ and $–N(CH_3)_2$ in phenyl ring, were found to have extremely significant anticancer activity and more percentage increase in life span and mean survival time which was comparable to standard 5-flurouracil. These compounds have also shown significant broad spectrum antibacterial activity against *E. coli* (MTCC-4351), *P. aeruginosa* (MTCC 424), *B. subtilis* (MTCC-441), *S. aureus* (MTCC 3160). Other synthesised compounds MDA1, MDA2, MDA3 and MDA8 with electron withdrowing groups like –Cl, $-NO_2$ etc were found to be inactive as anticancer as well as antibacterial.

Key words: Piperazine, chalcone, dehydroacetic acid, anticancer, antibacterial.