A number of $N$-substituted pyrimidine acyclic nucleosides were synthesized by coupling reaction of 2-(2-chloroethoxy)ethyl acetate or (2,2-dimethyl-1,3-dioxolan-4-yl)methyl 4-methylbenzenesulfonate with the corresponding base followed by deprotection. The synthesized compounds were tested for their antiviral activity against hepatitis B virus (HBV). The plaque reduction infectivity assay was used to determine virus count reduction as a result of treatment with the synthesized compounds which showed moderate to high antiviral activities.

**Key words:** Pyrimidines, Acyclic Nucleosides, Anti-Hepatitis B Virus