A series of new benzene-based carbamates was designed, synthesized and comprehensively characterized. All of the tested compounds (more than 40 analogues) were evaluated for their in vitro ability to inhibit the acetyl- and butyrylcholinesterase enzymes. The selectivity index of individual molecules to cholinesterases was also determined. Generally, the inhibitory potency was stronger against butyryl- compared to acetylcholinesterase; however, some of the compounds showed a promising inhibition of both enzymes. In fact, two compounds 27 (benzyl ethyl(1-oxo-1-phenylpropan-2-yl) carbamate and 37 benzyl (1-(3-chlorophenyl)-1-oxopropan-2-yl) (methyl)carbamate) had a very high selectivity index, while the second one (28) reached the lowest inhibitory concentration IC50 value, which corresponds quite well with galanthamine. The privileged structure (PS) method was used in the design step using cathinone both as a PS and a building block. Beside carbamates other series of potentially bioactive compounds were obtained in the reaction of cathinone derivatives with thiosemicarbazide and reaction methyl carbamate of cathinone derivatives. The compounds obtained were isolated, purified and identified. Accordingly, we describe here new series of thiosemikarbazones, 2-(3H)-oksazolones, 1,4-izoquinolinediones and peptide conjugates. The activity of the latter compounds are now under testing.