A methanol and protic ionic liquid Ugi multicomponent reaction path to cytotoxic α-phenylacetamido amides

Ahmed Al Otaibi,¹ Fiona M. Deane,¹ Cecilia C Russell,¹ Lacey Hizartzidis,¹ Siobhann N McCluskey,¹ Jennette A. Sakoff² and Adam McCluskey¹*
(RS)-N-(2-cyclohexylamino)-1-(4-methoxyphenyl)-2-oxoethyl)-N-(3,5-dimethoxyphenyl)propiolamide (1)
(RS)-N-(2-(Cyclohexylamino)-2-oxo-1-phenylethyl)-N-phenylpropionamide (12)
(RS)-N-Cyclohexyl-2-(2-methoxy-N-phenylacetamido)-2-phenylacetamide (16b)
(RS)- (E)-N-(2-(Cyclohexylamino)-2-oxo-1-phenylethyl)-N-phenylbut-2-enamide (16c)
(RS)-N-(2-(Cyclohexylamino)-2-oxo-1-phenylethyl)-N-phenylbut-2-enamide (16d)
(RS)-N-Cyclohexyl-2-phenyl-2-(N-phenylacetamido)acetamide (16e)
(RS)-2-Cyano-N-(2-(cyclohexylamino)-2-oxo-1-phenylethyl)-N-phenylacetamide (16f)
(RS)-N-(2-(cyclohexylamino)-2-oxo-1-phenylethyl)-3,3,3-trifluoro-N-phenylpropanamide (16g)
(RS)-N-(2-(Benzylamino)-2-oxo-1-phenylethyl)-N-phenylpropiolamide (17a)
(RS)-N-Benzyl-2-(2-methoxy-N-phenylacetamido)-2-phenylacetamide (17b)
(RS)-(E)-N-(2-(benzylamino)-2-oxo-1-phenylethyl)-N-phenylbut-2-enamide (17c)
**(RS)-N-(2-(Benzylamino)-2-oxo-1-phenylethyl)-N-phenylbut-2-ynamide (17d)**

![Chemical Structure](image)

**17d**

![NMR Spectrum](image)

**17d**

![NMR Spectrum](image)
(RS)-N-Benzyl-2-phenyl-2-(N-phenylacetamido)acetamide (17e)
(RS)-N-Benzyl-2-(2-cyano-N-phenylacetamido)-2-phenylacetamide (17f)
(RS)-N-(2-(Benzylamino)-2-oxo-1-phenylethyl)-3,3,3-trifluoro-N-phenylpropanamide (17g)
(RS)-Ethyl (2-phenyl-2-(N-phenylpropionamido)acetyl)glycinate (18a)
(RS)-Ethyl (2-(2-methoxy-N-phenylacetamido)-2-phenylacetyl)glycinate (18b)
(RS)-(E)-Ethyl 2-(2-phenyl-2-(N-phenylbut-2-enamido)acetamido)acetate (18c)
(RS)-Ethyl (2-phenyl-2-(N-phenylbut-2-ynamido)acetyl)glycinate (18d)
(RS)-Ethyl (2-(2-methoxy-N-phenylacetamido)-2-phenylacetyl)glycinate (18e)
(RS)-Ethyl 2-(2-(2-cyano-N-phenylacetamido)-2-phenylacetamido)acetate (18f)
(RS)-Ethyl (2-phenyl-2-(3,3,3-trifluoro-N-phenylpropanamido)acetyl)glycinate (18g)
(RS)-N-(2-(cyclohexylamino)-2-oxo-1-phenylethyl)-N-(4-methoxyphenyl)propiolamide (19)
(RS)-N-(2-(cyclohexylamino)-1-(2,3-dimethoxyphenyl)-2-oxoethyl)-N-phenylpropionamide (20)
(RS)-N-(2-(cyclohexylamino)-1-(3,4-dimethoxyphenyl)-2-oxoethyl)-N-phenylpropiolamide (21)