

CHAPTER 5

5. Spectral Data

Figure 21. ^1H NMR of intermediate 6c

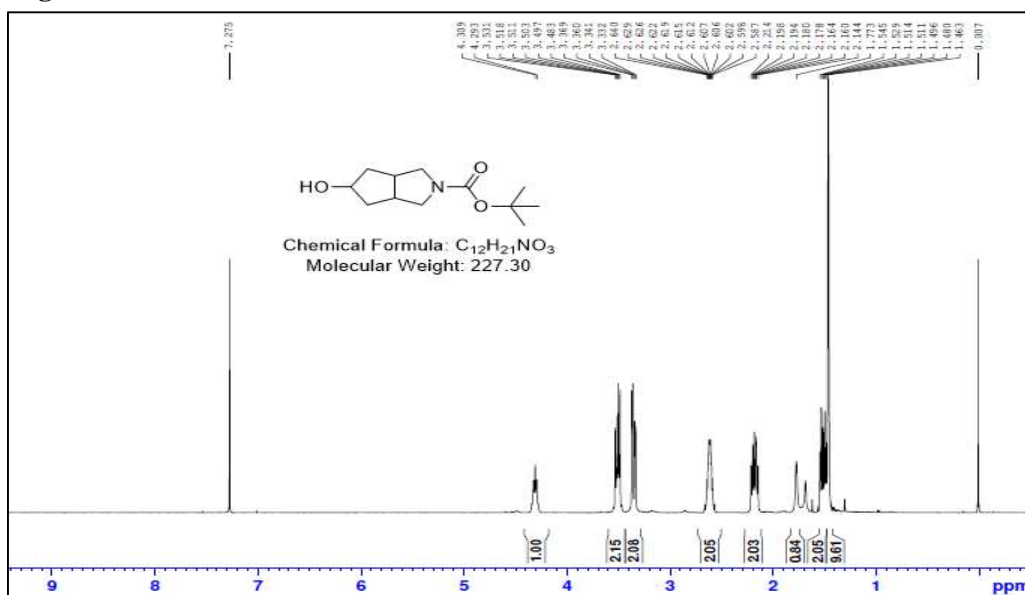


Figure 22. ESI-MS of intermediate 6c

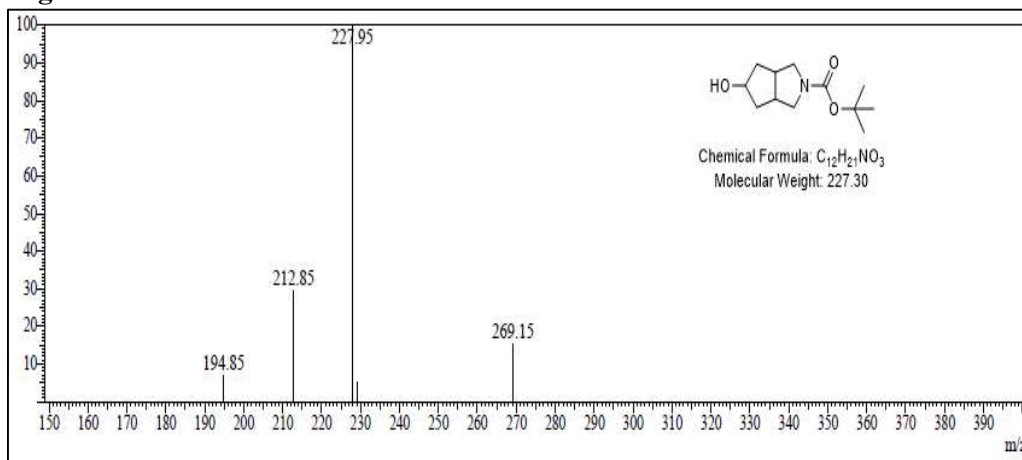


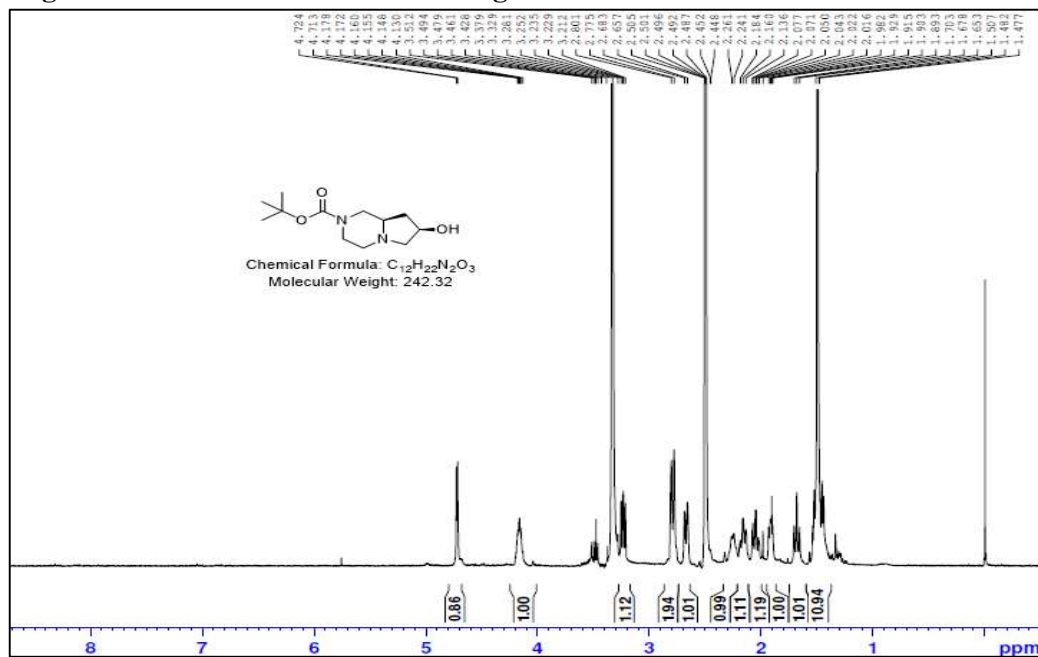
Figure 23. ^1H NMR of intermediate 6g

Figure 24. ESI-MS of intermediate 6g

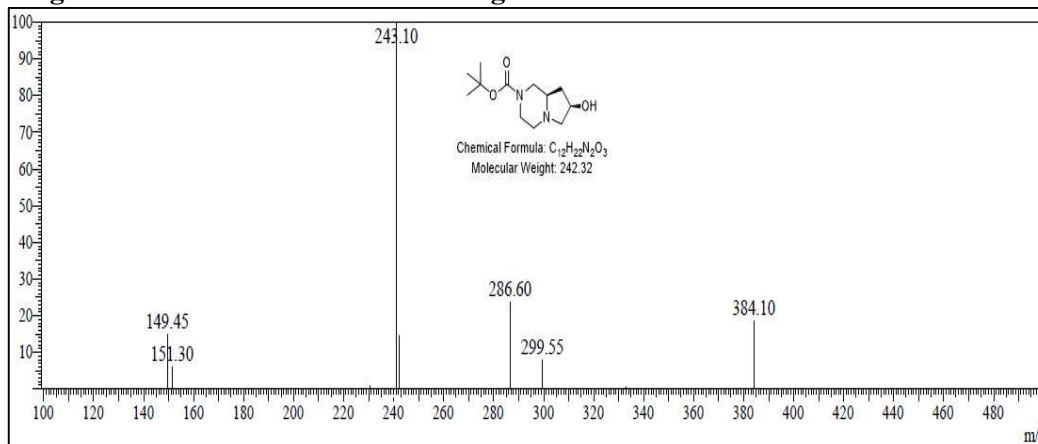


Figure 25. ^1H NMR of intermediate 6h

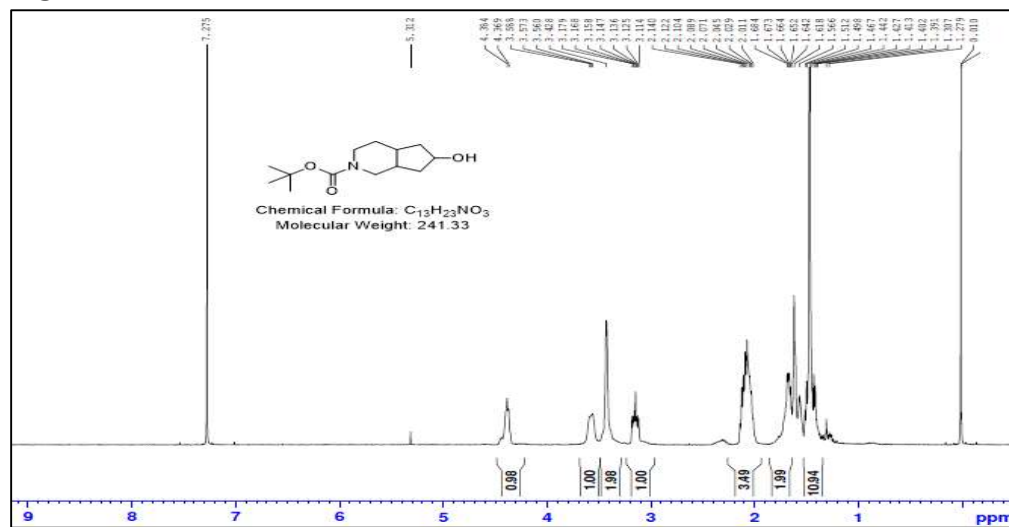


Figure 26. ESI-MS of intermediate 6h

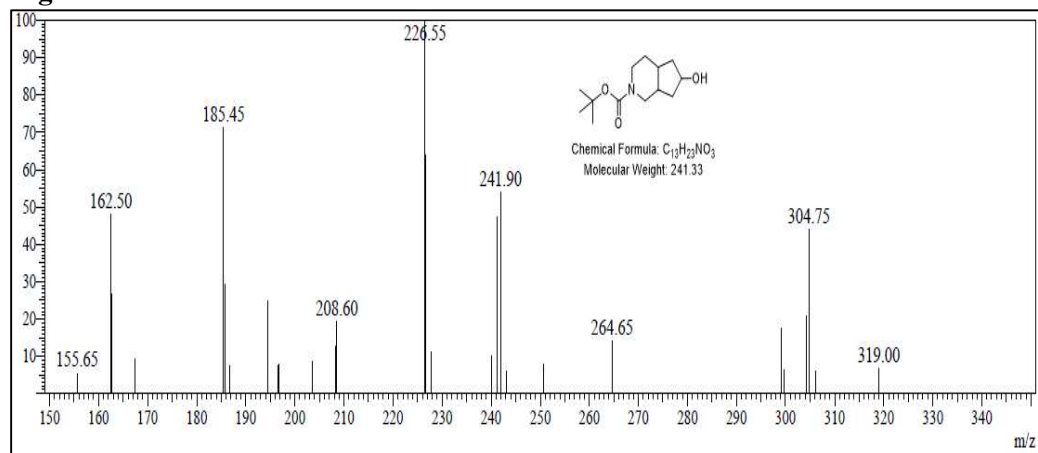


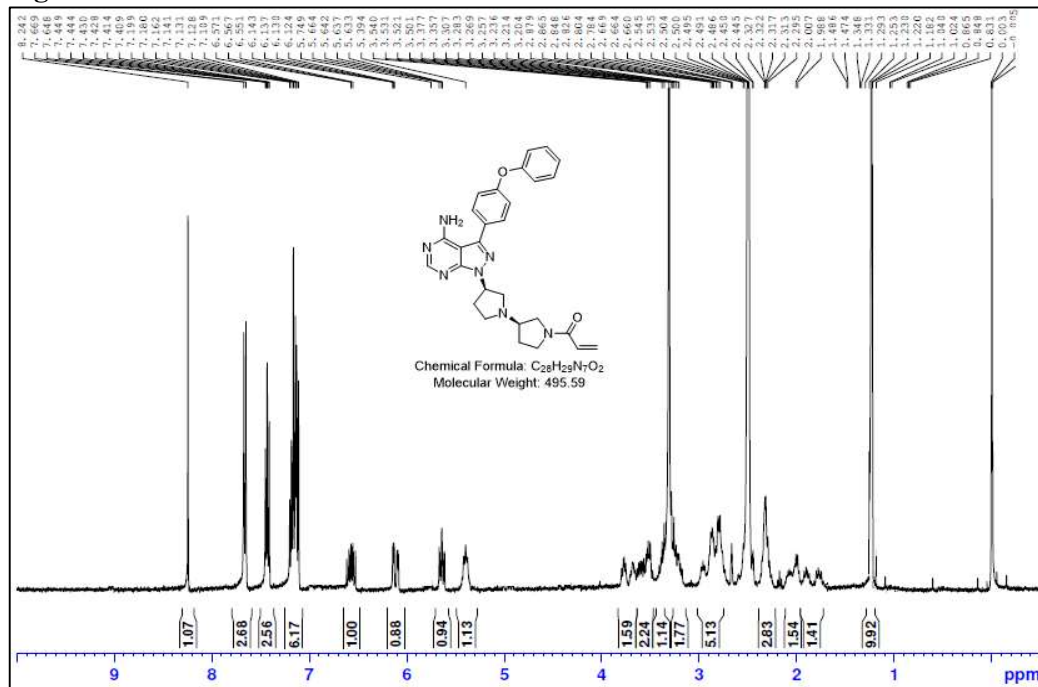
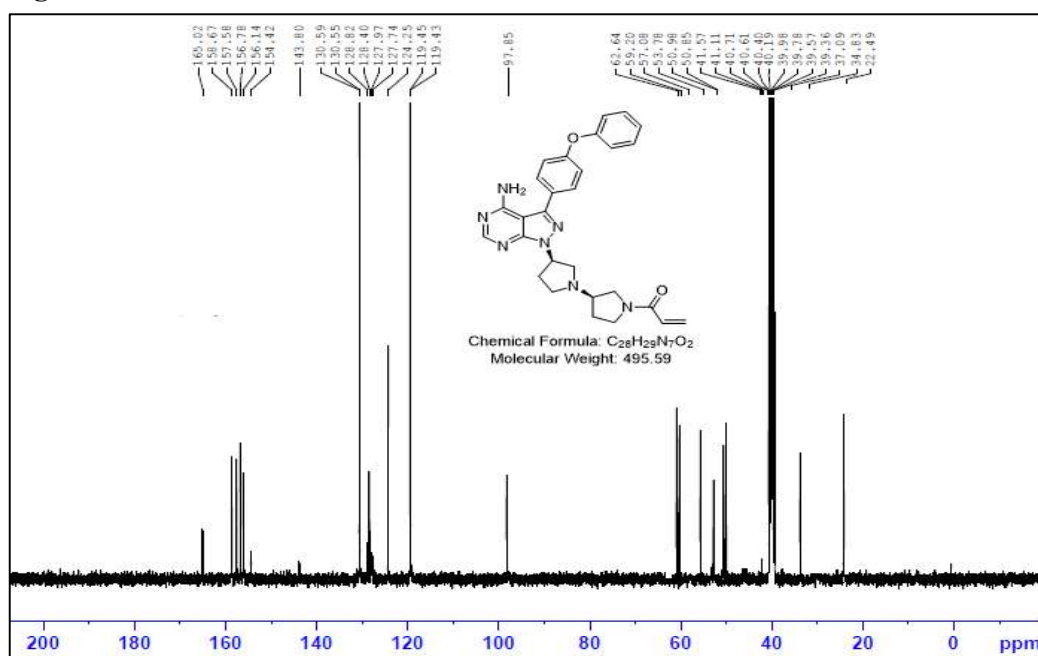
Figure 27. ^1H NMR of 24aFigure 28. ^{13}C NMR of 24a

Figure 29. ESI-MS of 24a

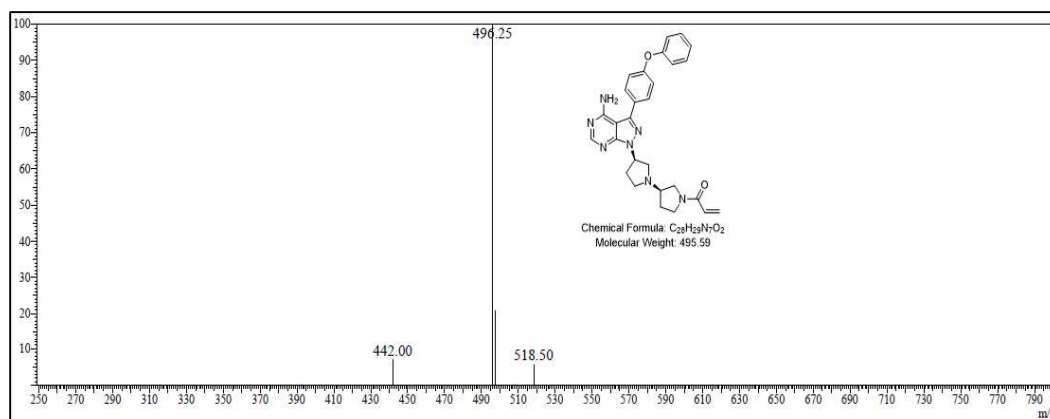


Figure 30. UPLC of 24a

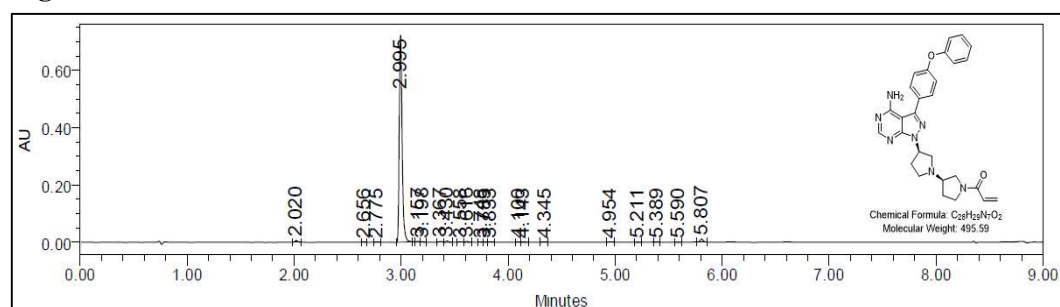


Figure 31. ^1H NMR of 24b

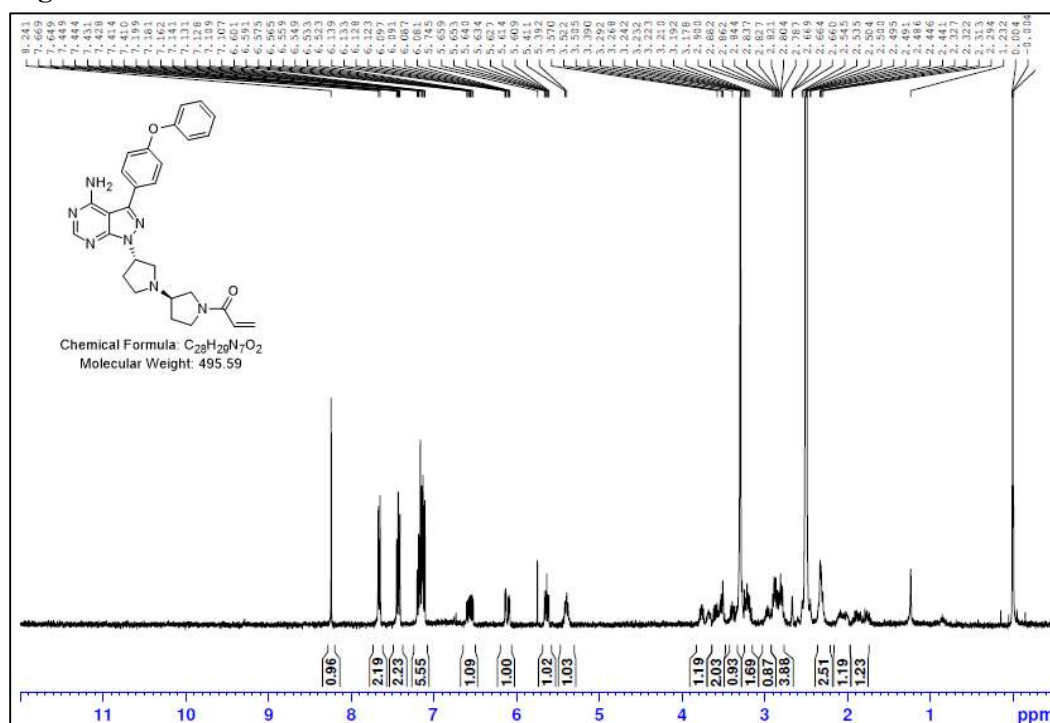


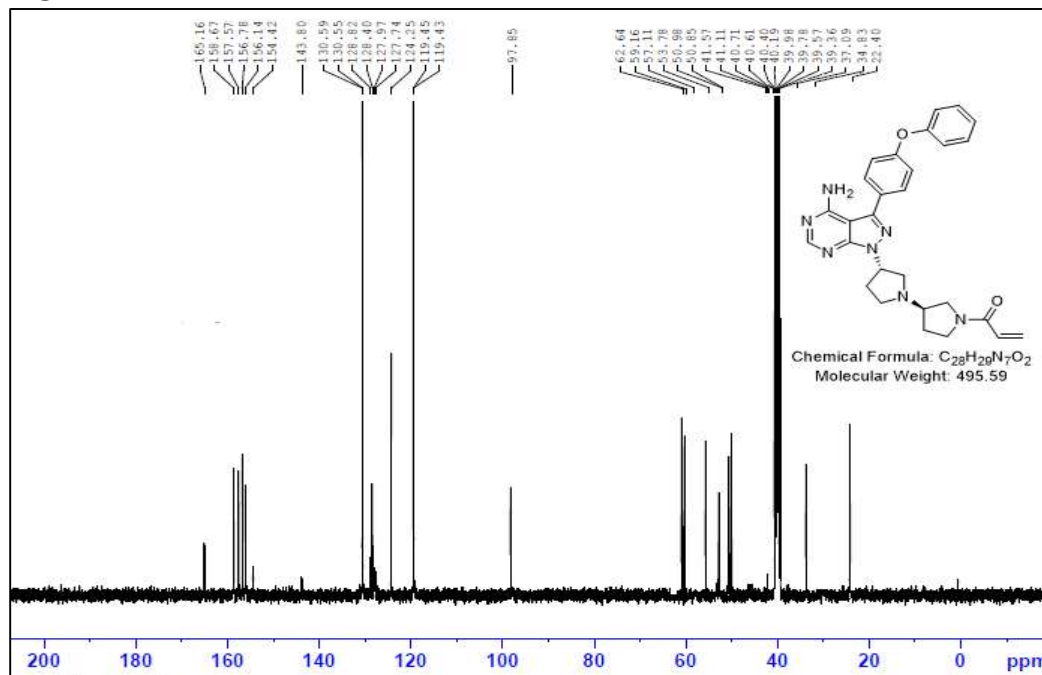
Figure 32. ^{13}C NMR of 24b

Figure 33. ESI-MS of 24b

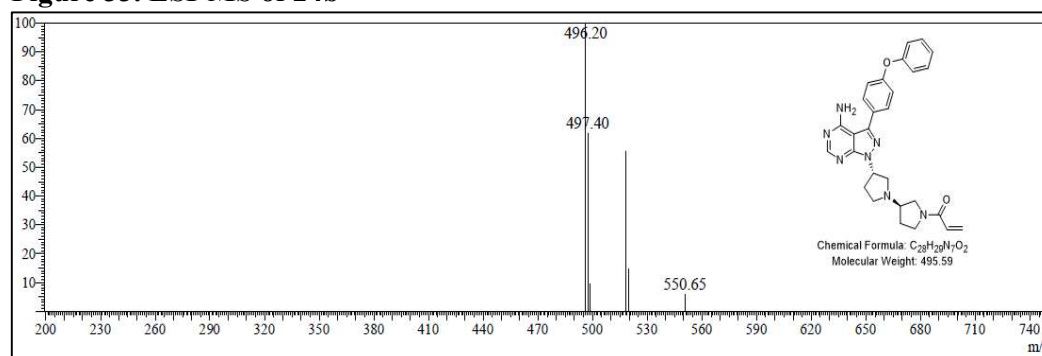


Figure 34. UPLC of 24b

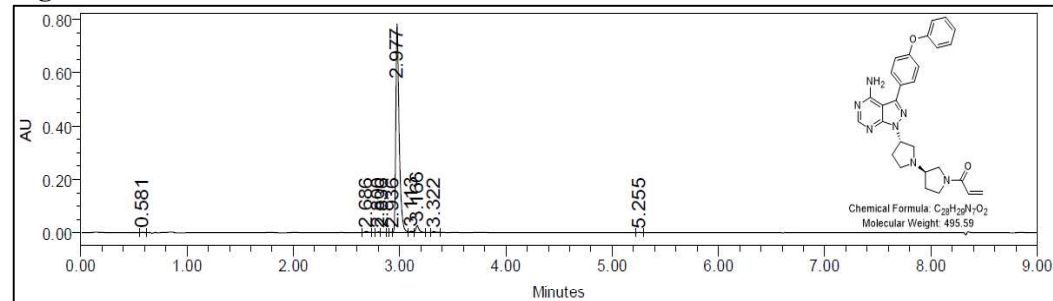


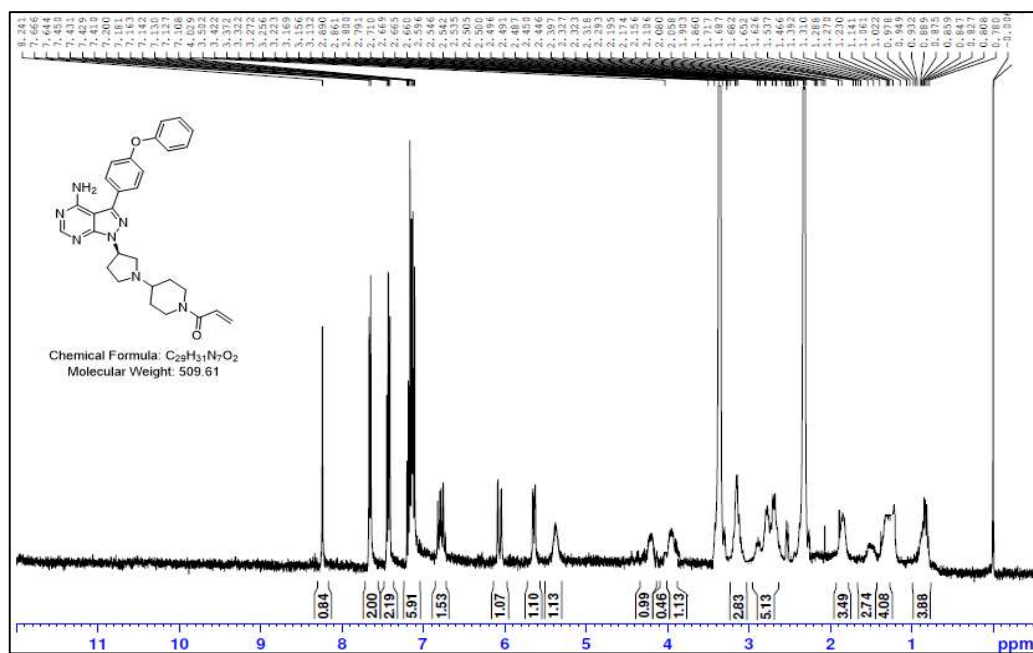
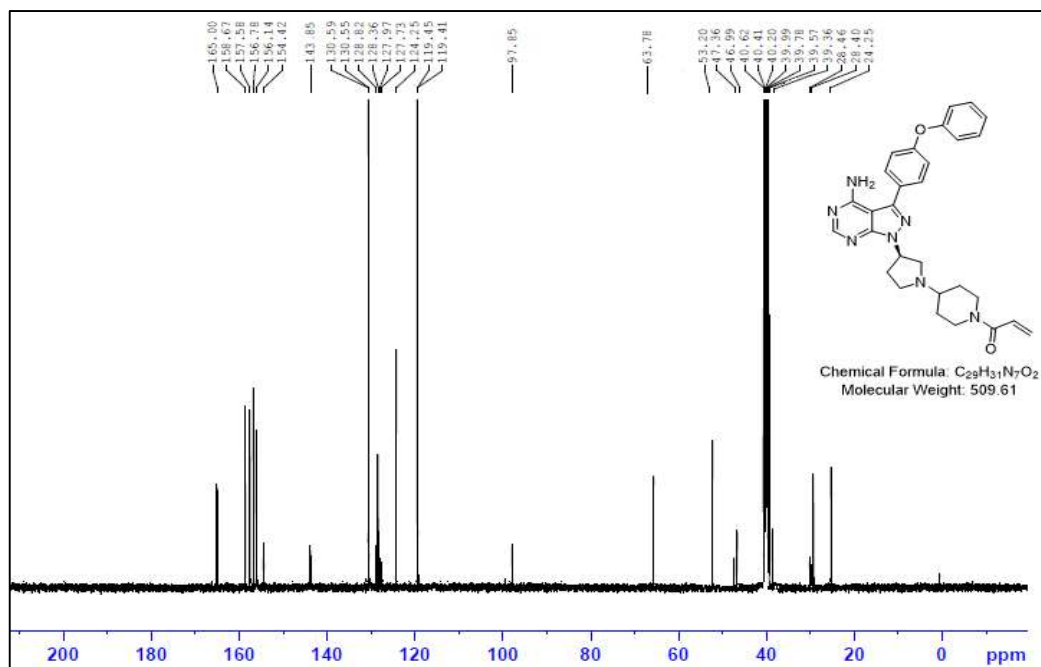
Figure 35. ^1H NMR of 24cFigure 36. ^{13}C NMR of 24c

Figure 37. ESI-MS of 24c

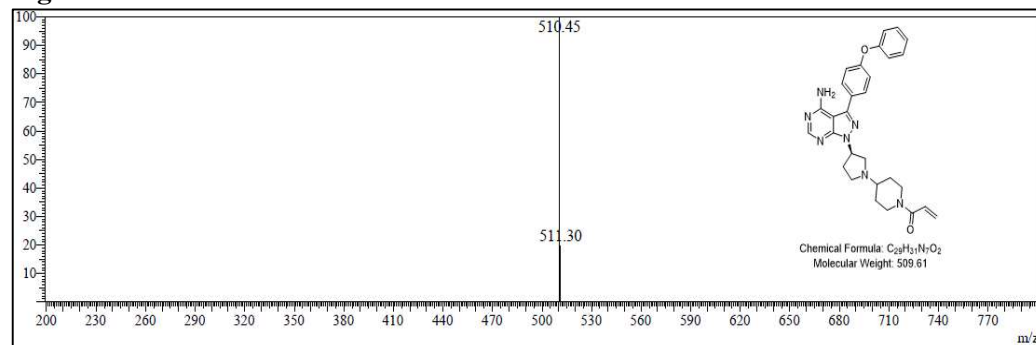


Figure 38. UPLC of 24c

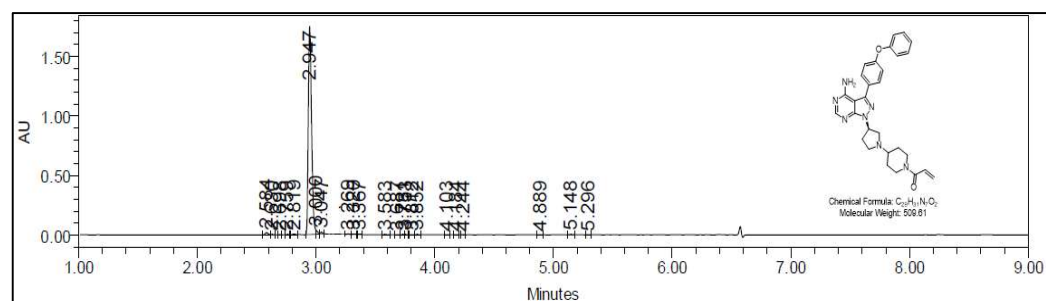
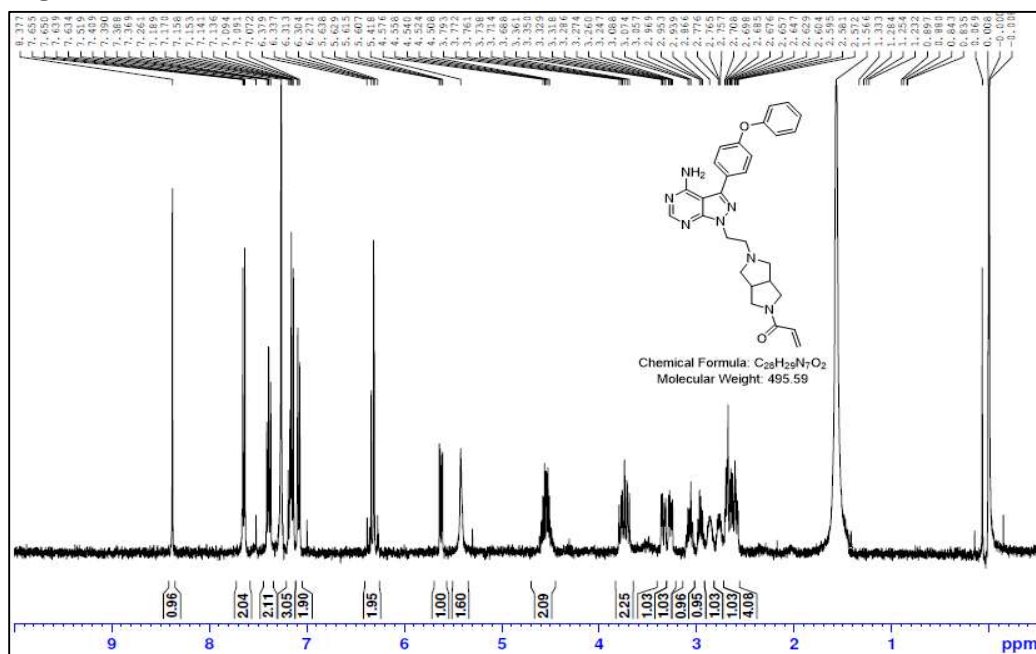
Figure 39. 1H NMR of 24d

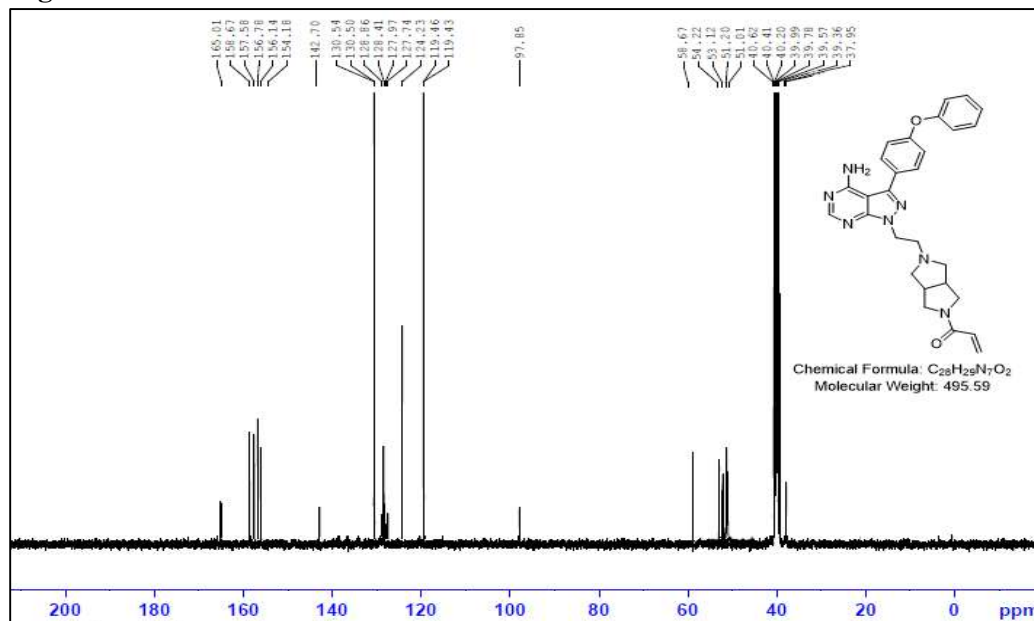
Figure 40. ^{13}C NMR of 24d

Figure 41. ESI-MS of 24d

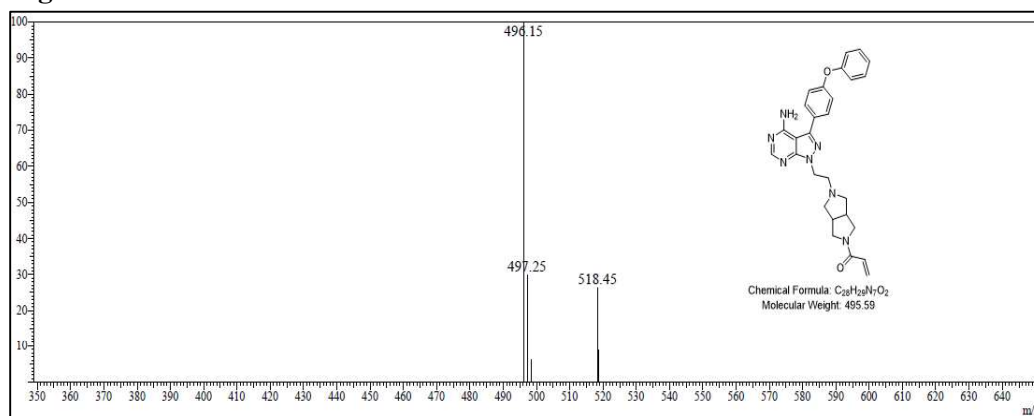


Figure 42. UPLC of 24d

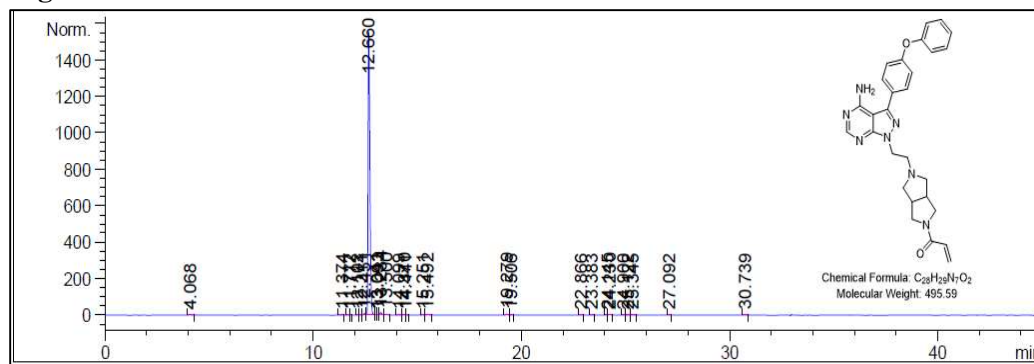


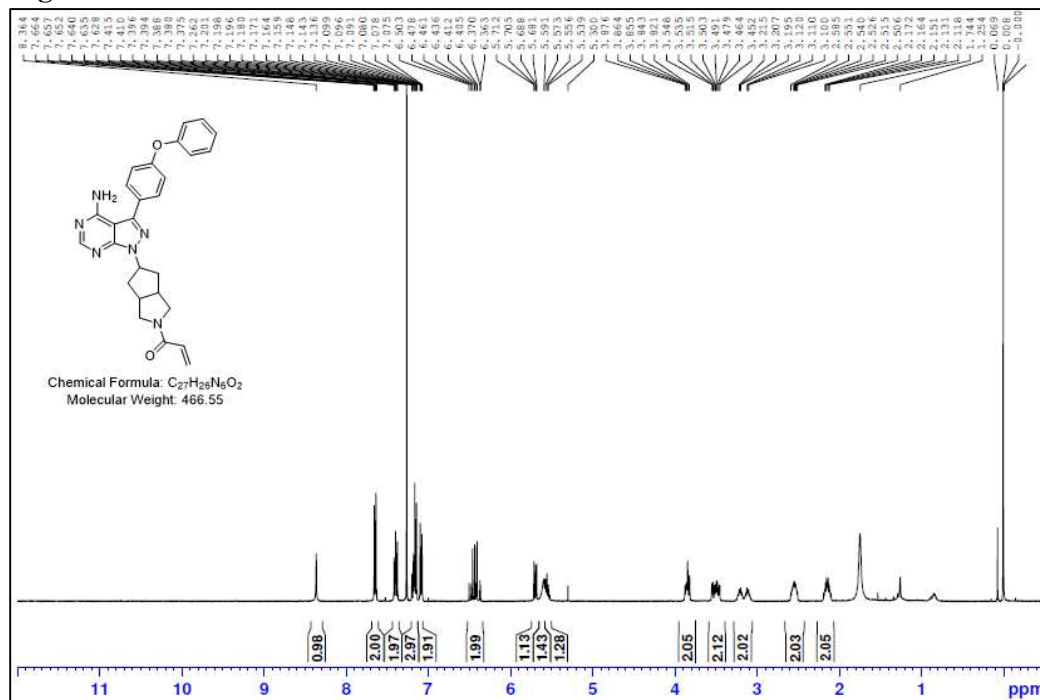
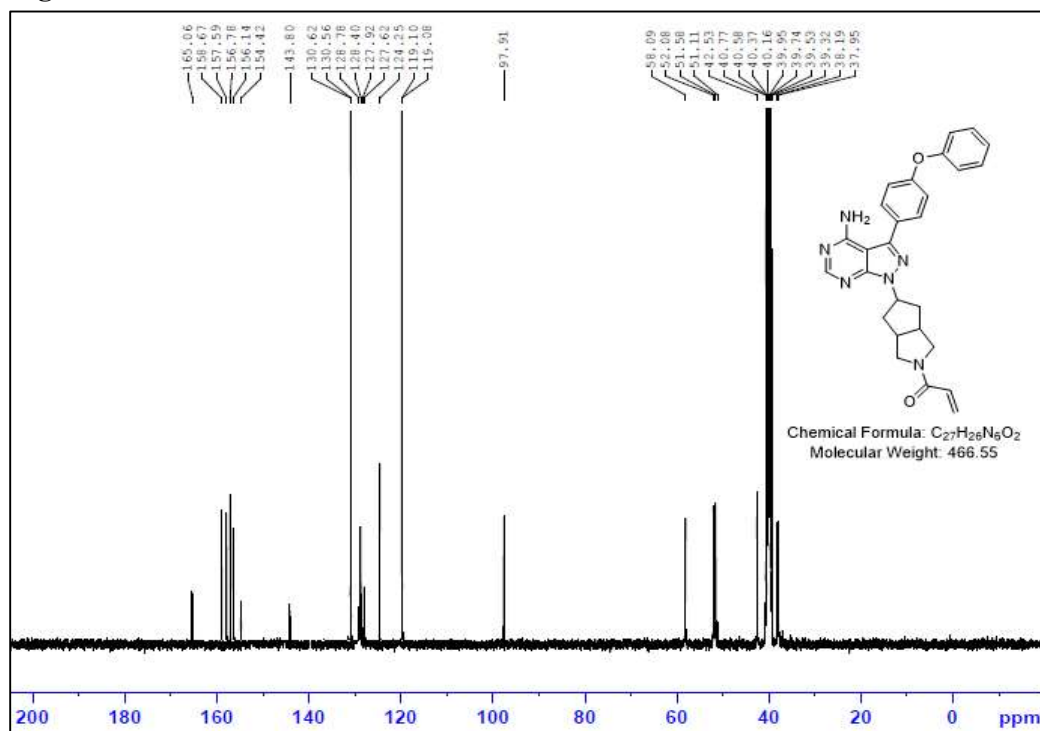
Figure 43. ^1H NMR of 24eFigure 44. ^{13}C NMR of 24e

Figure 45. ESI-MS of 24e

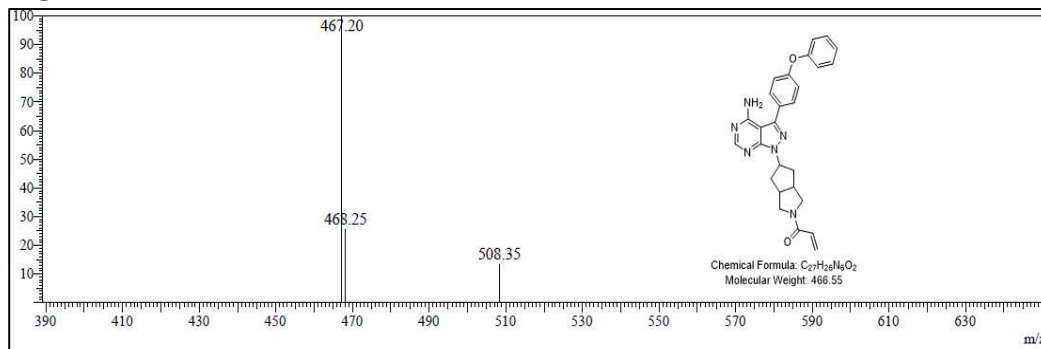


Figure 46. UPLC of 24e

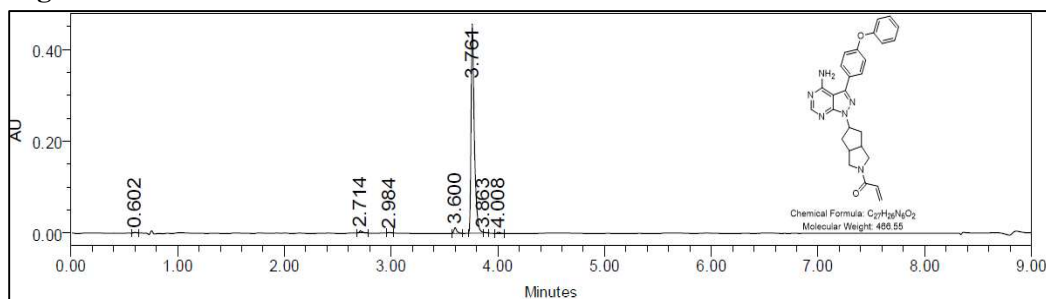
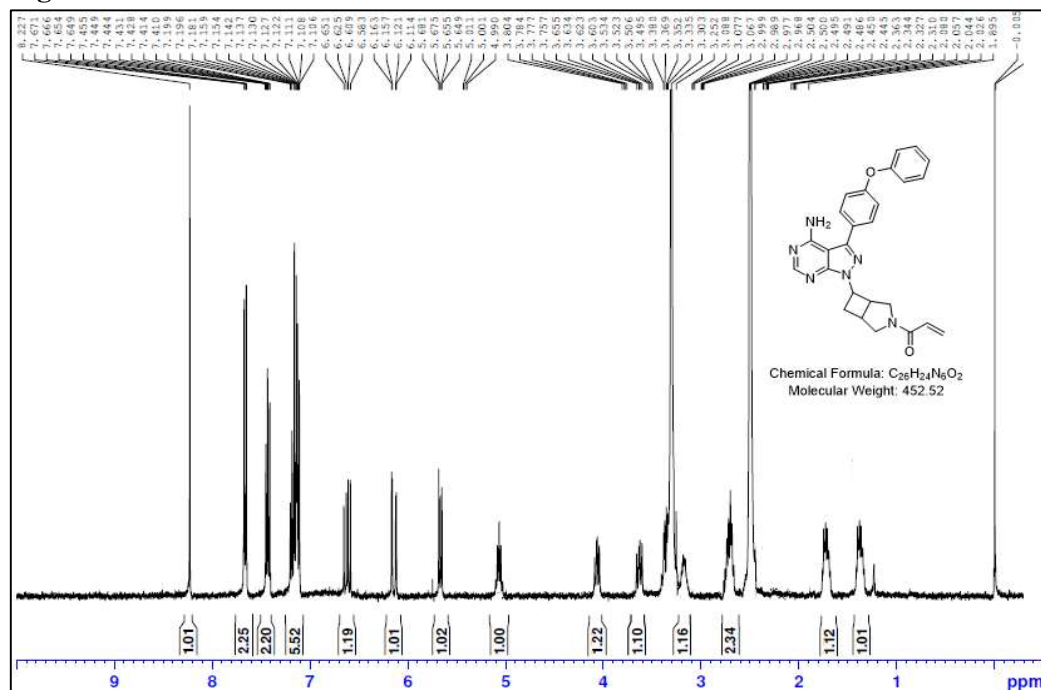
Figure 47. 1H NMR of 24f

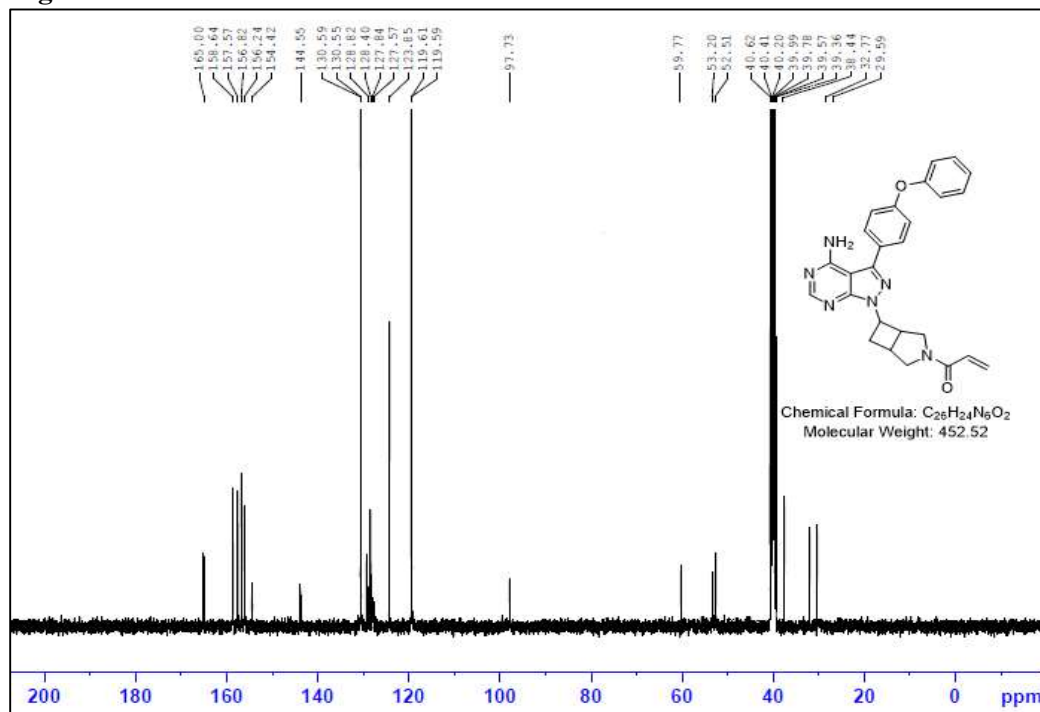
Figure 48. ^{13}C NMR of 24f

Figure 49. ESI-MS of 24f

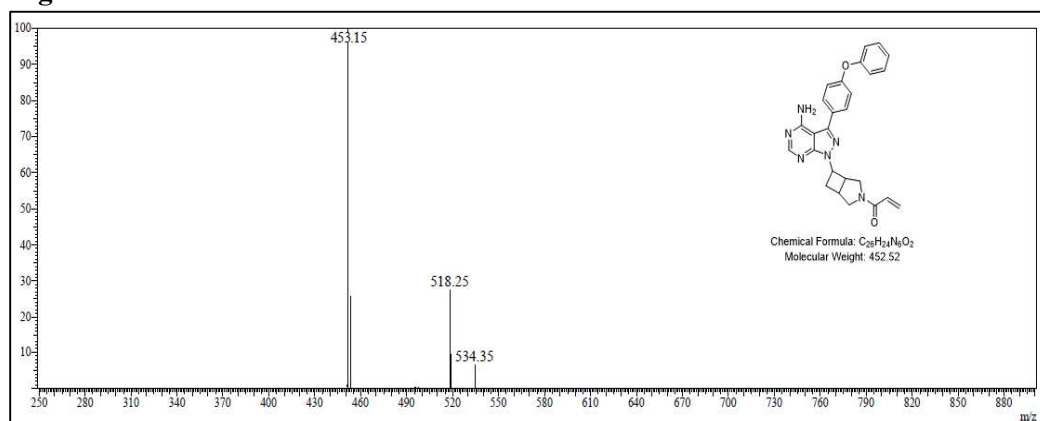


Figure 50. UPLC of 24f

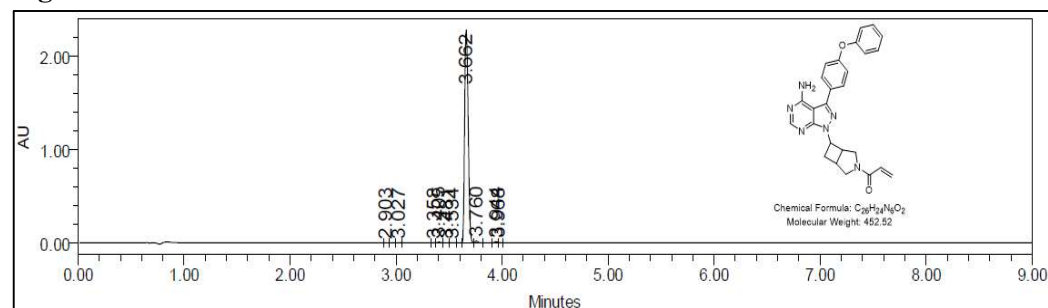


Figure 51. ^1H NMR of 24g

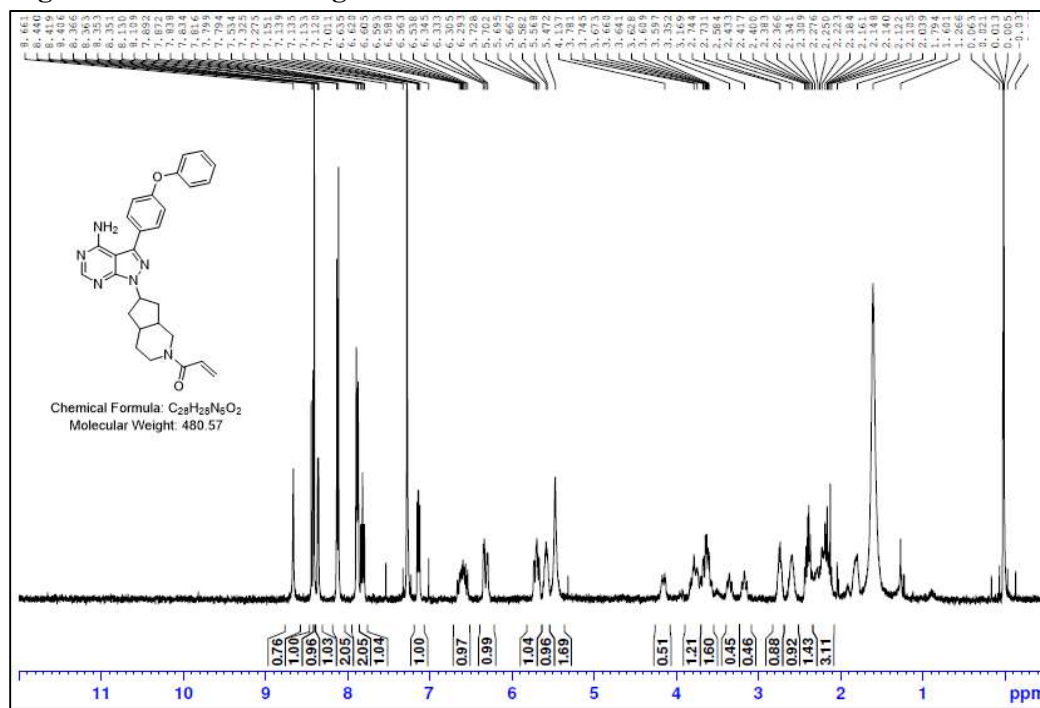


Figure 52. ^{13}C NMR of 24g

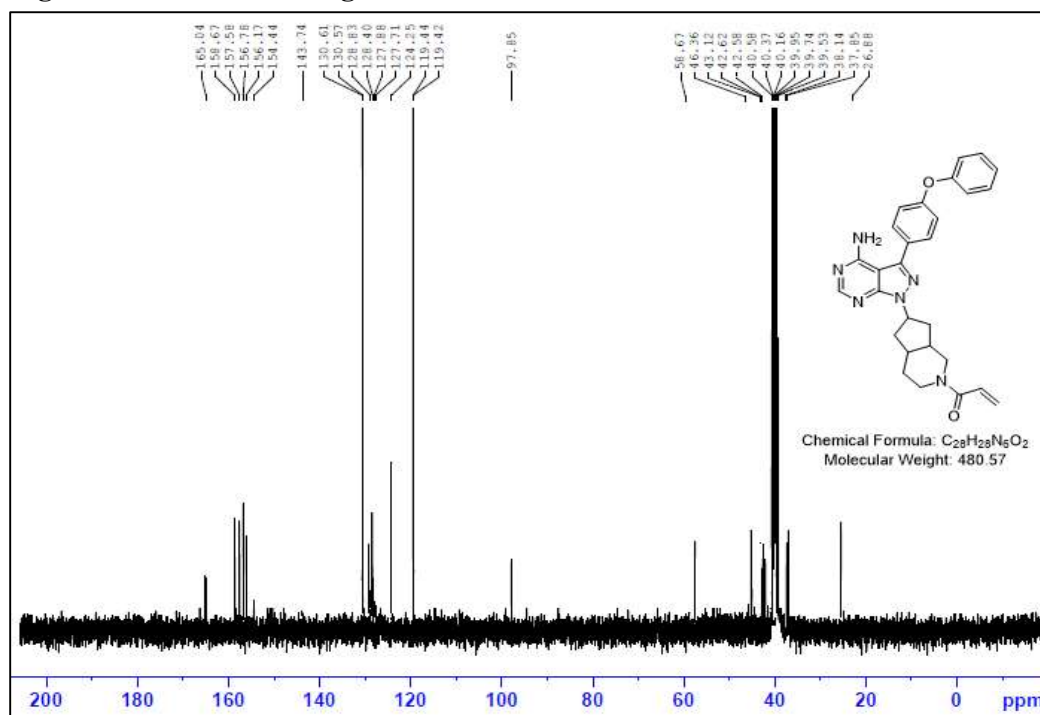


Figure 53. ESI-MS of 24g

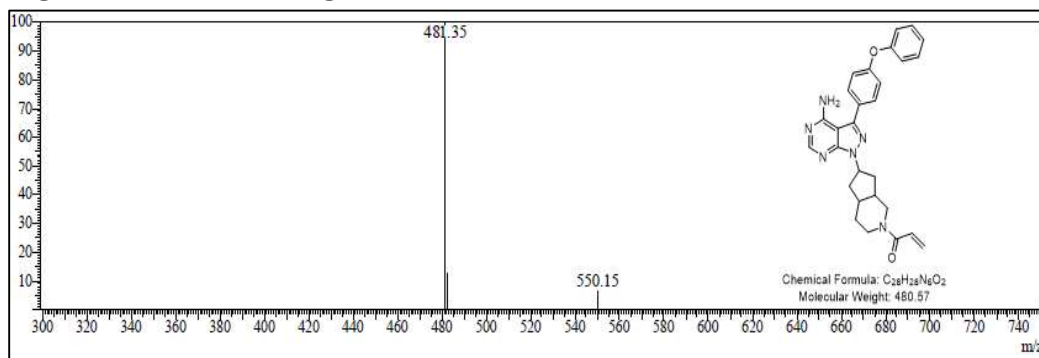


Figure 54. UPLC of 24g

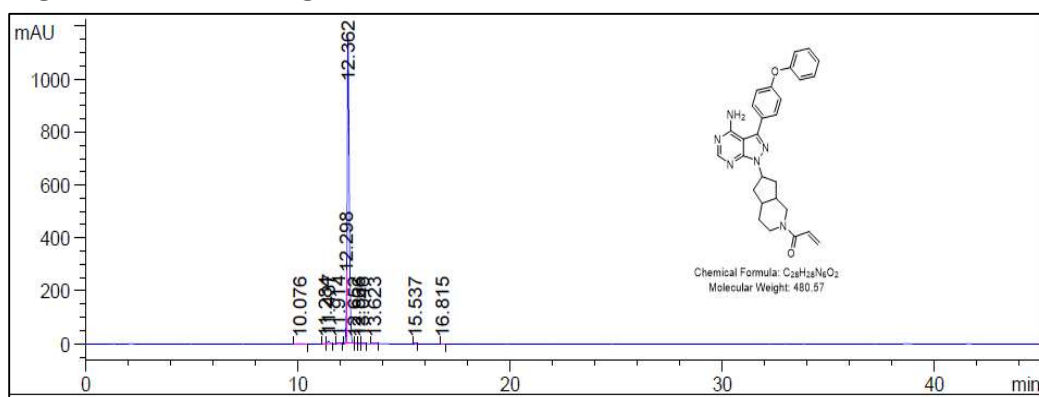
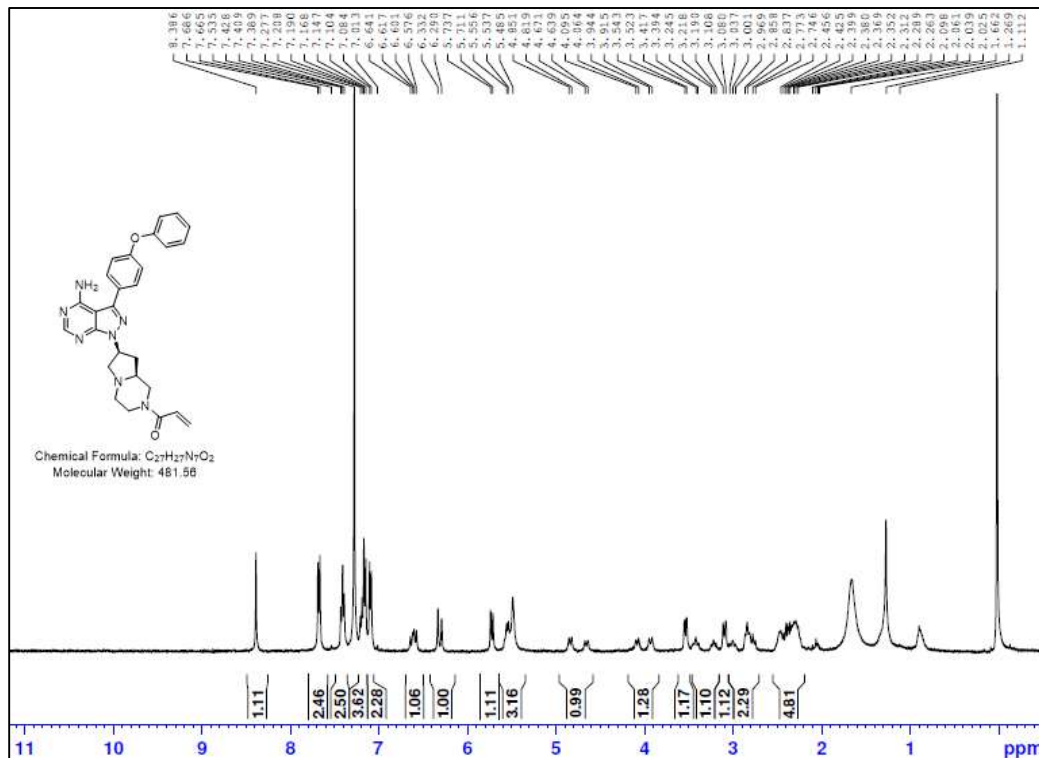
Figure 55. 1H NMR of 24h

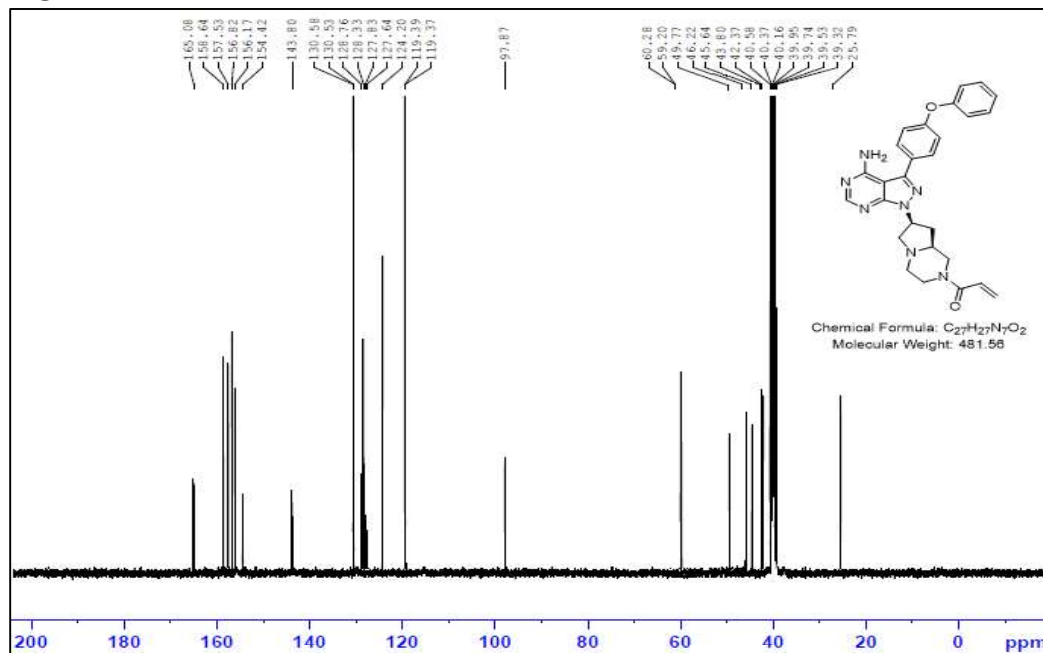
Figure 56. ^{13}C NMR of 24h

Figure 57. ESI-MS of 24h

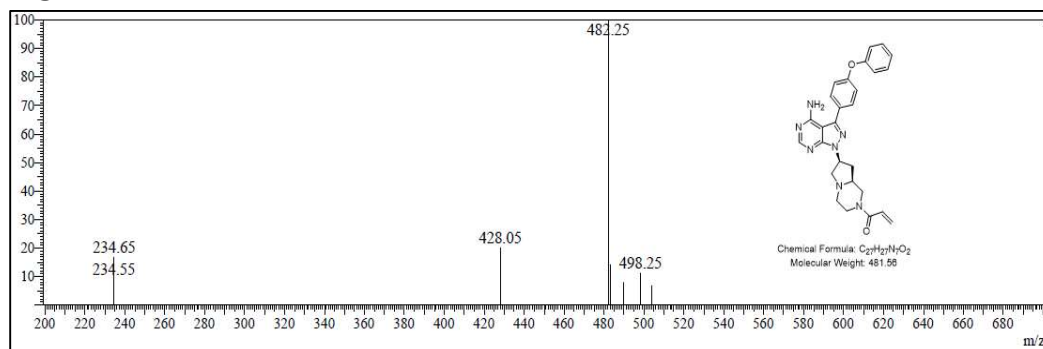


Figure 58. UPLC of 24h

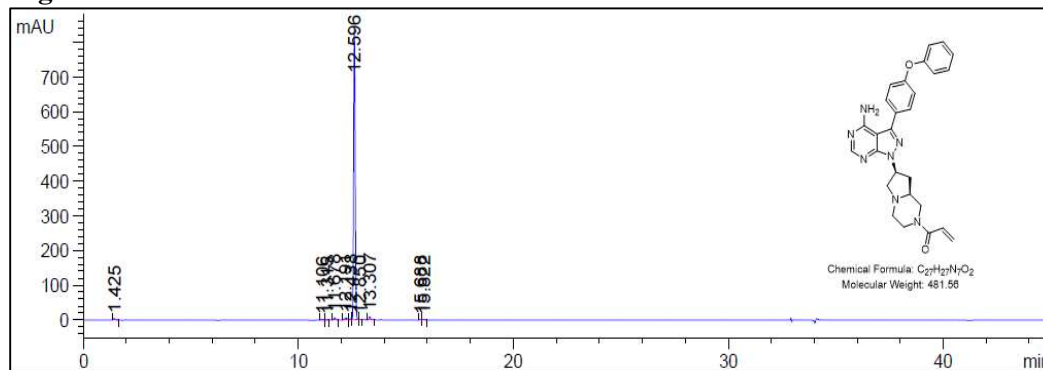


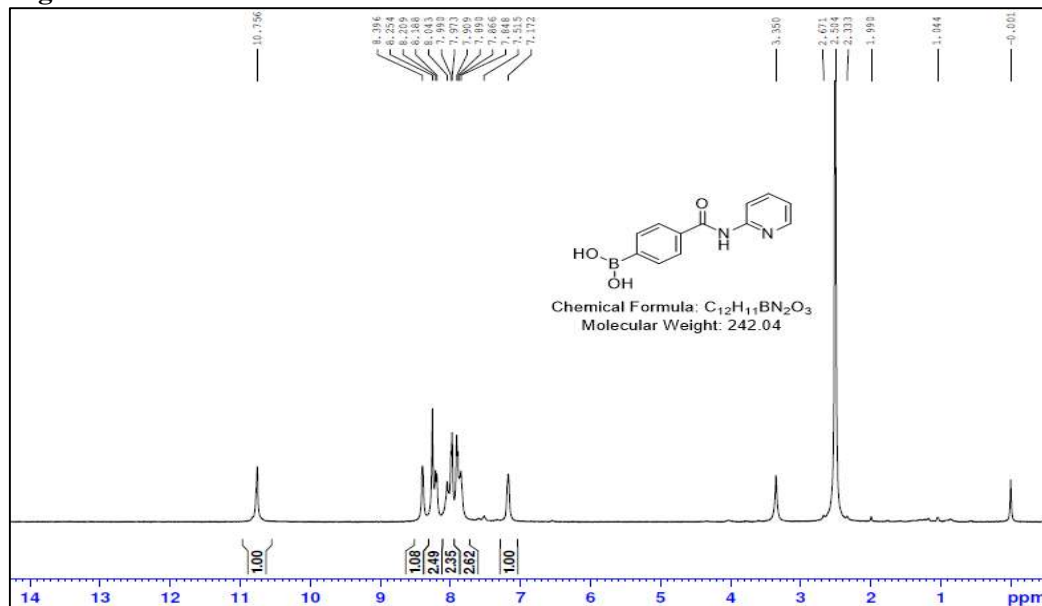
Figure 59. ^1H NMR of intermediate 28b

Figure 60. ESI-MS of intermediate 28b

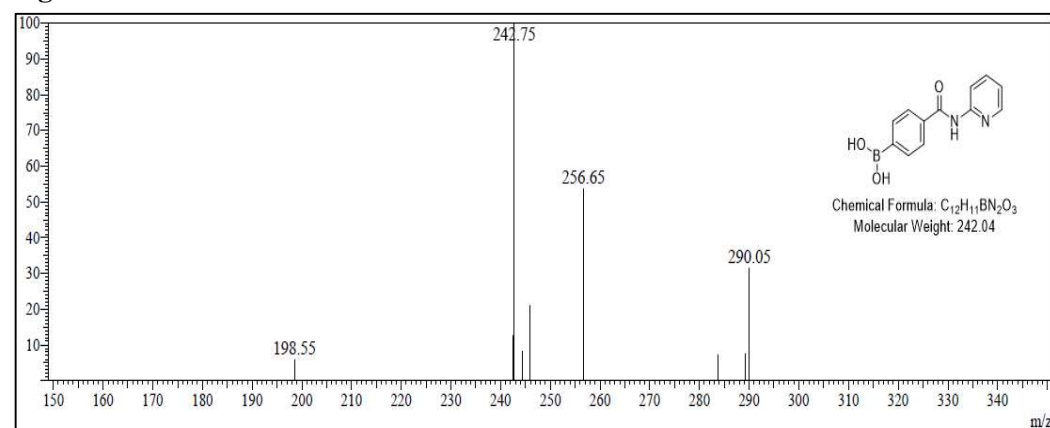


Figure 61. UPLC of intermediate 28b

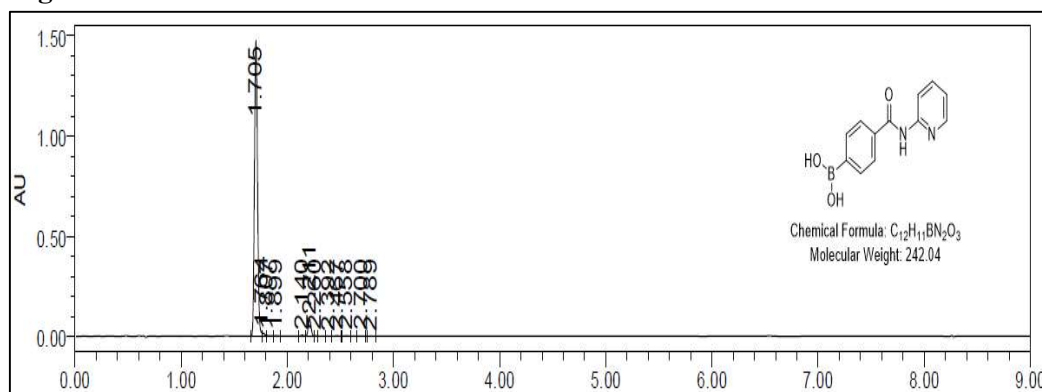


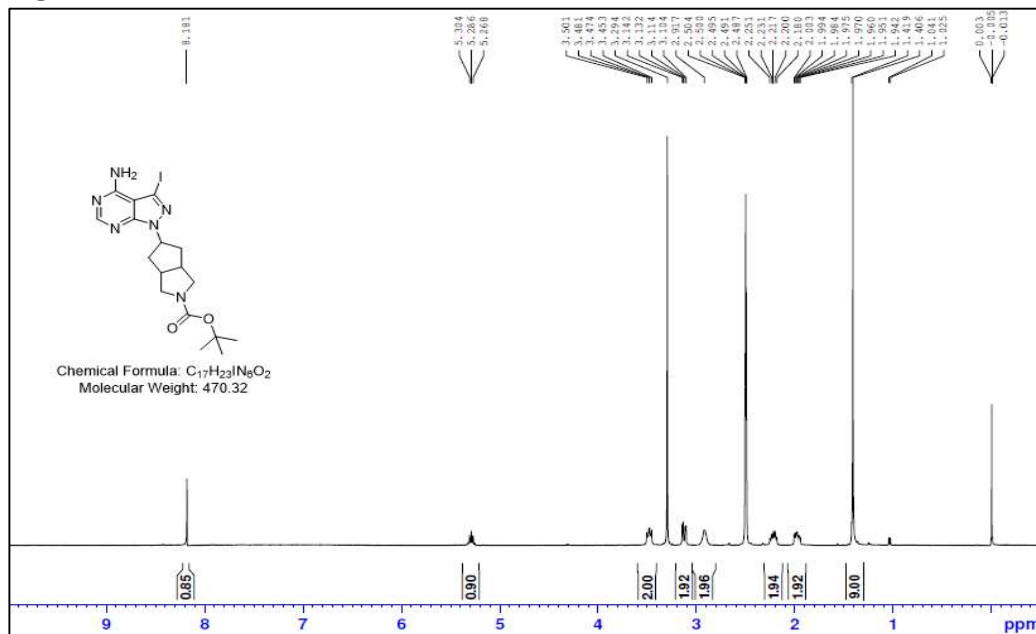
Figure 62. ^1H NMR of intermediate 29

Figure 63. ESI-MS of intermediate 29

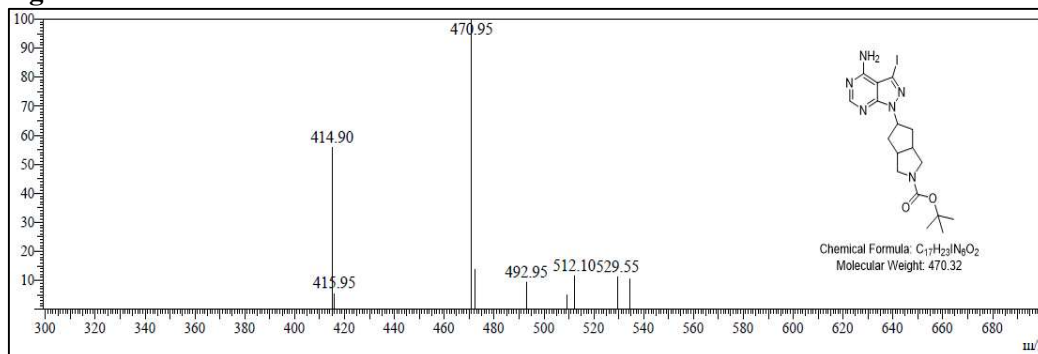


Figure 64. UPLC of intermediate 29

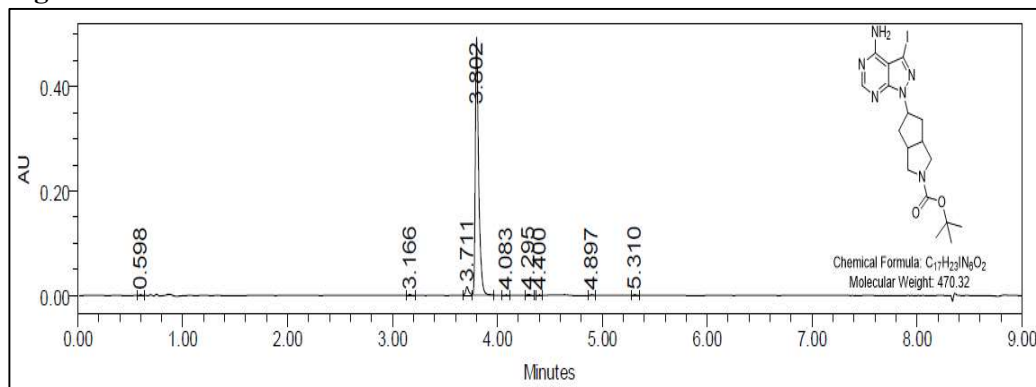


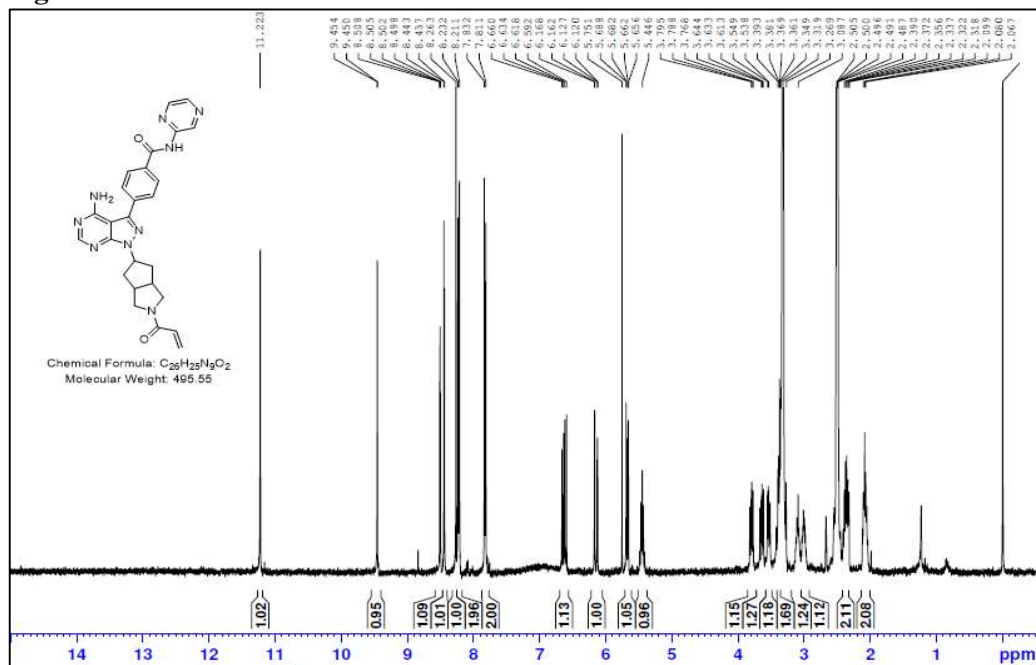
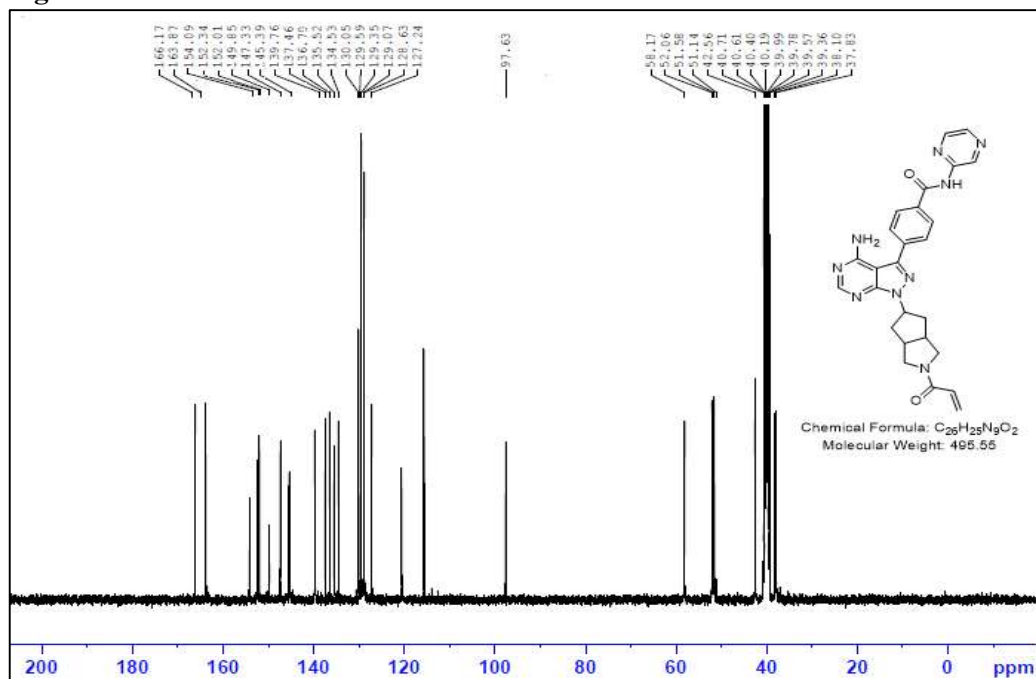
Figure 65. ^1H NMR of 32aFigure 66. ^{13}C NMR of 32a

Figure 67. ESI-MS of 32a

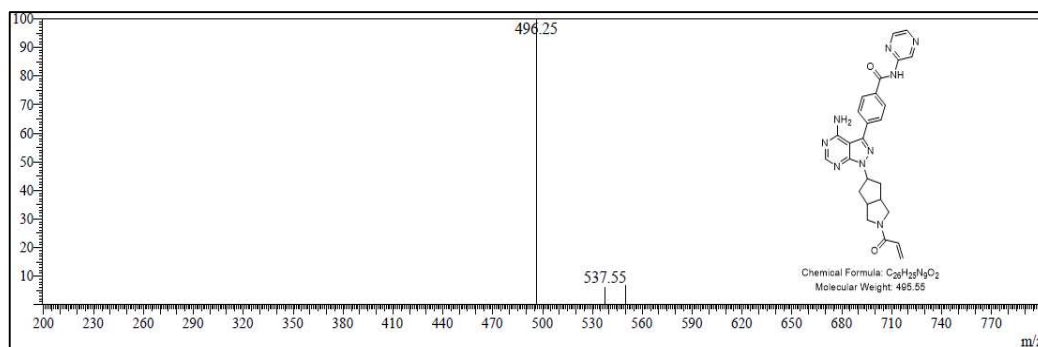


Figure 68. UPLC of 32a

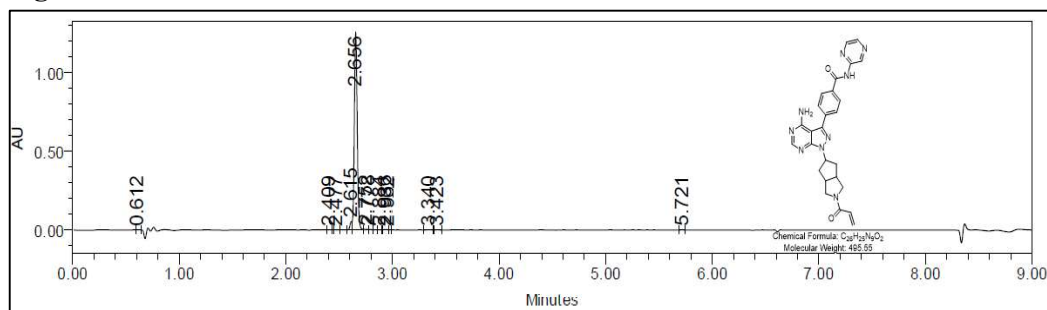
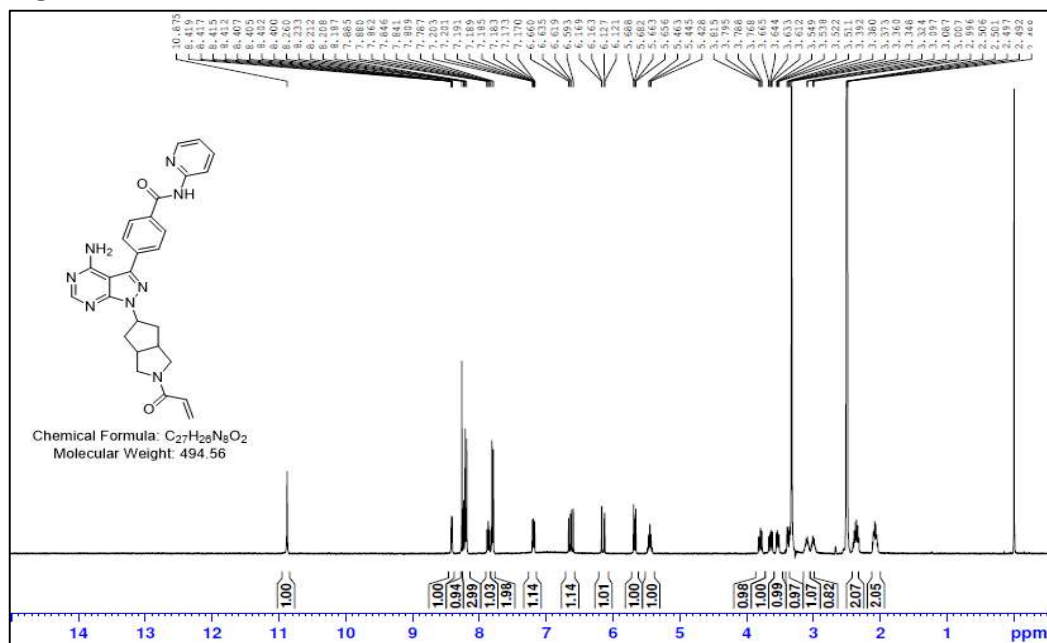
Figure 69. 1H NMR of 32b

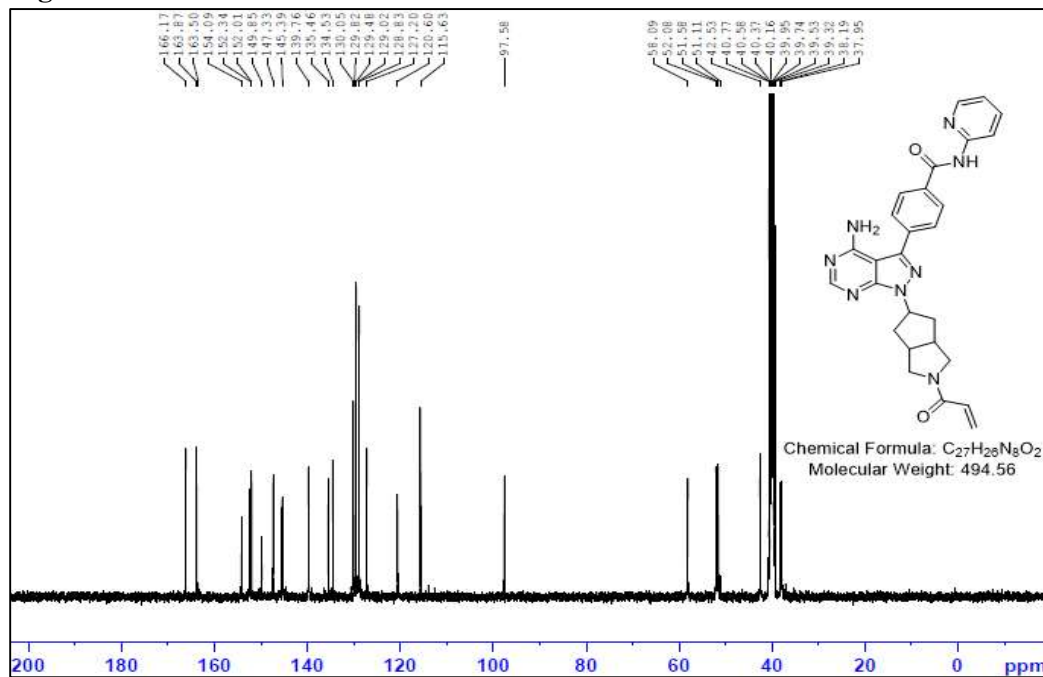
Figure 70. ^{13}C NMR of 32b

Figure 71. ESI-MS of 32b

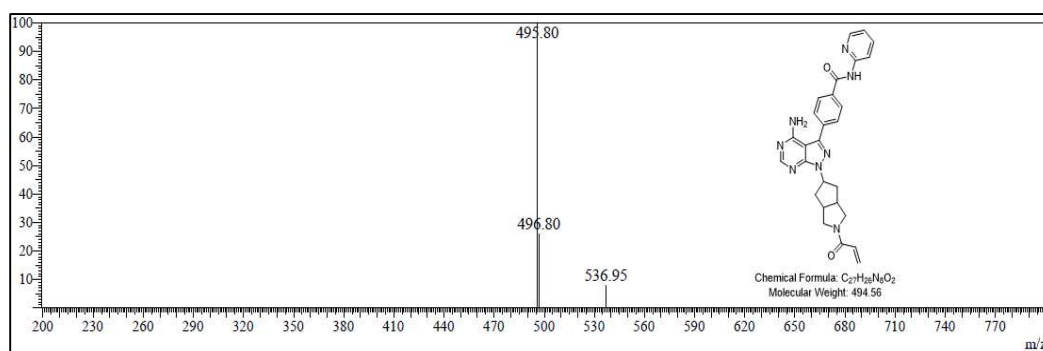


Figure 72. UPLC of 32b

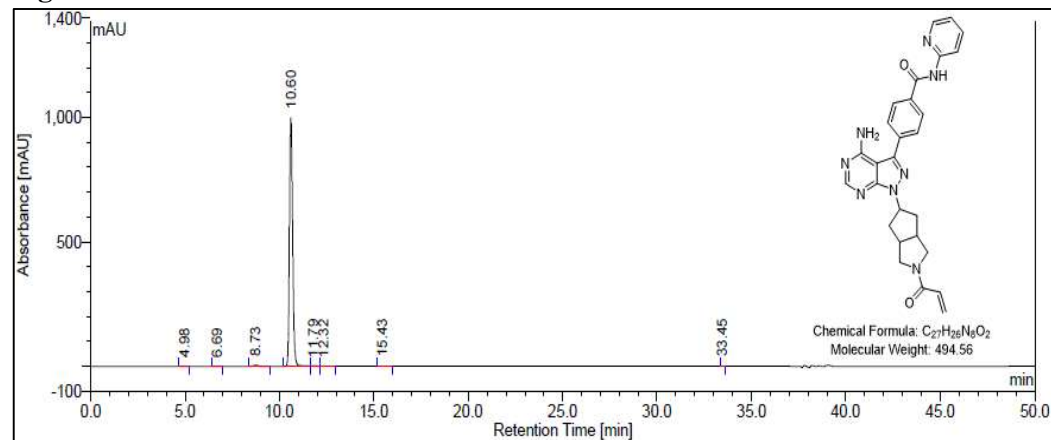


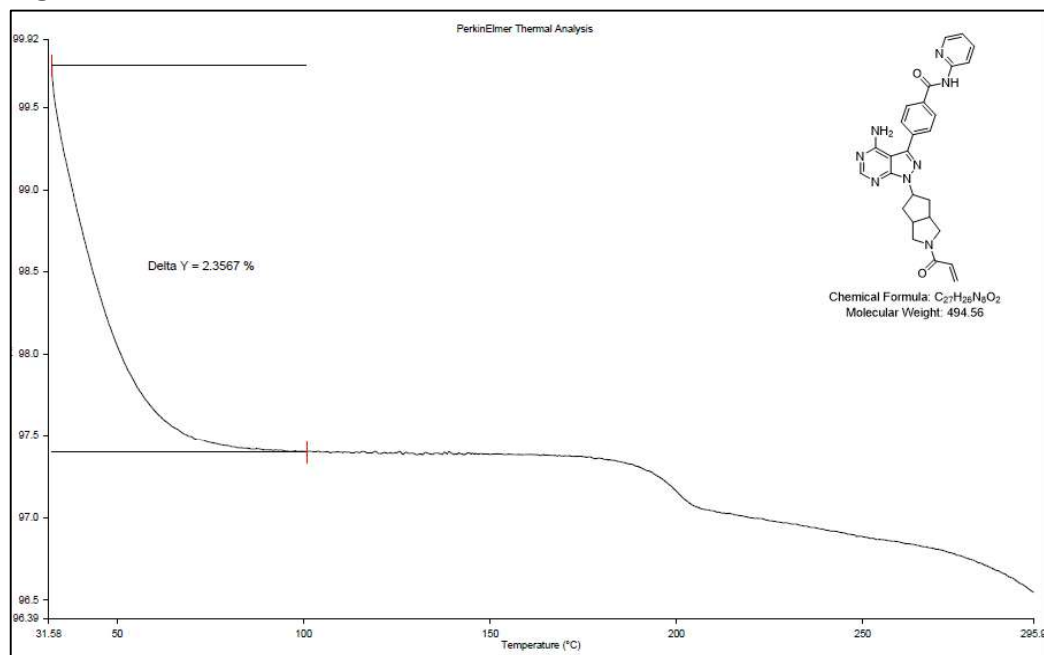
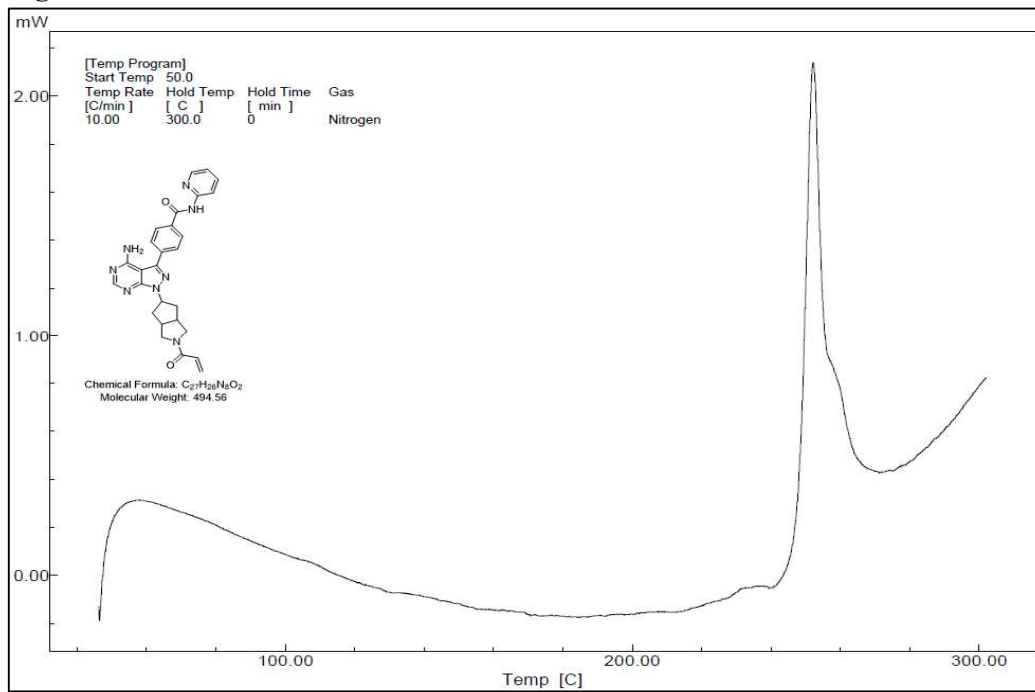
Figure 73. TGA of 32b**Figure 74. DSC of 32b**

Figure 75. XRD of 32b

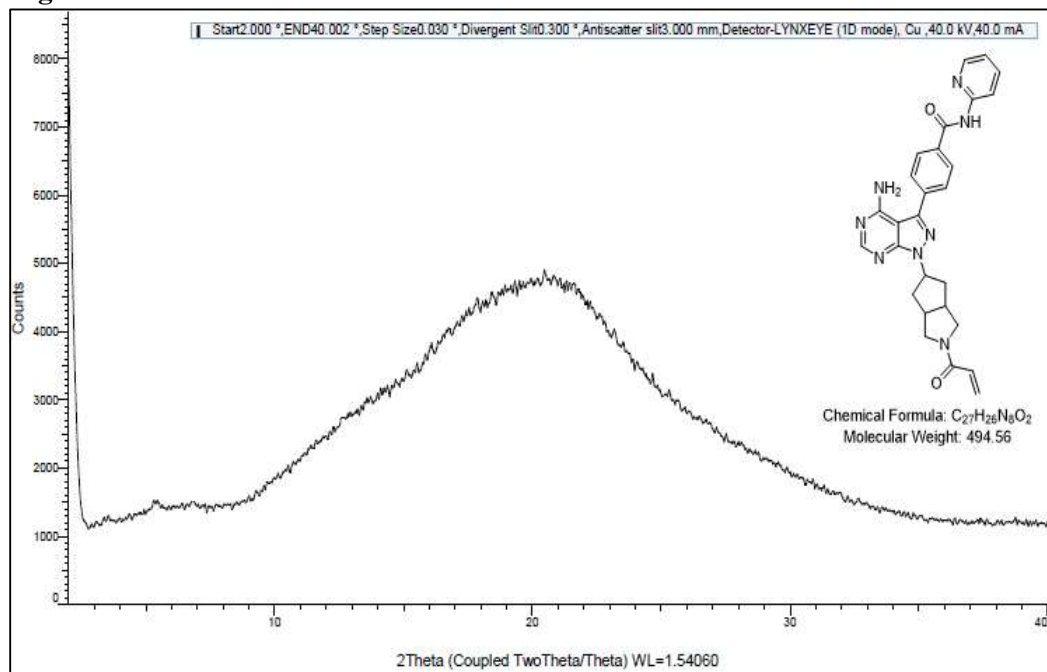
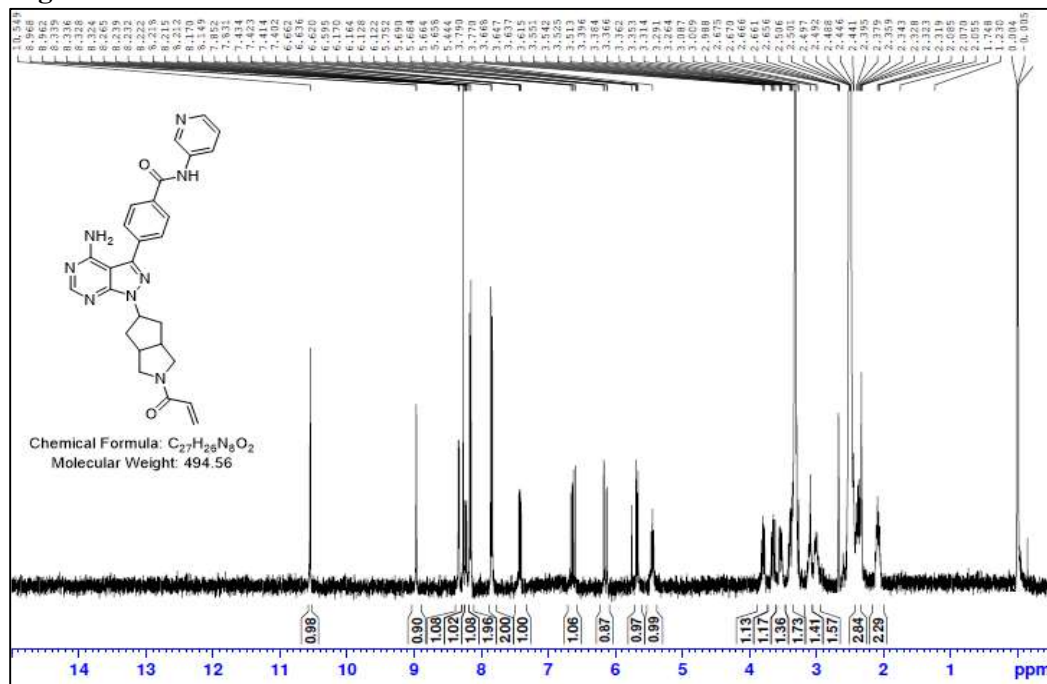
Figure 76. 1H NMR of 32c

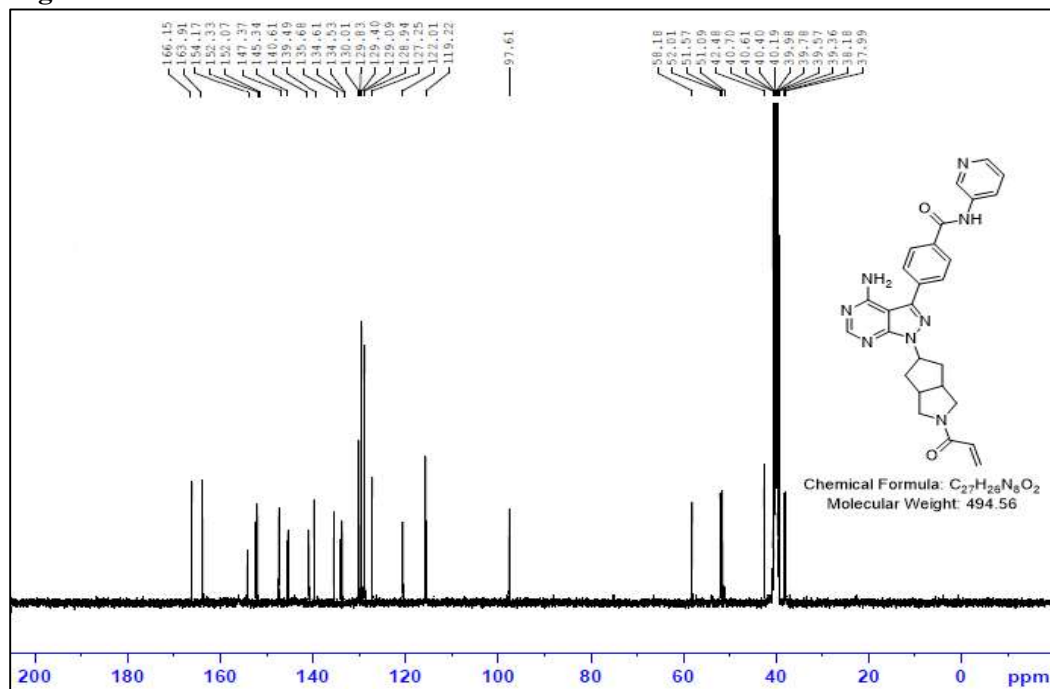
Figure 77. ^{13}C NMR of 32c

Figure 78. ESI-MS of 32c

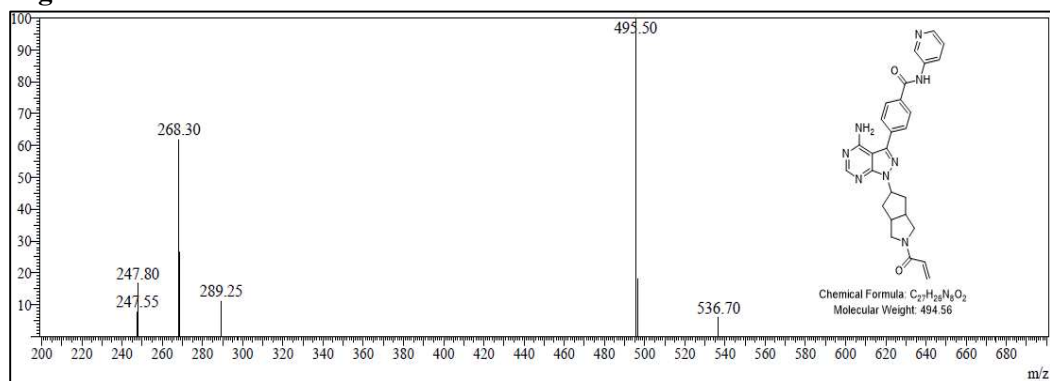


Figure 79. UPLC of 32c

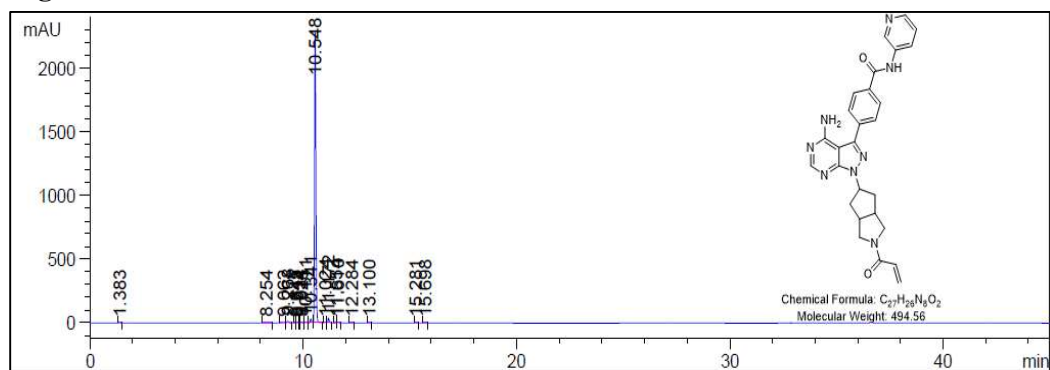


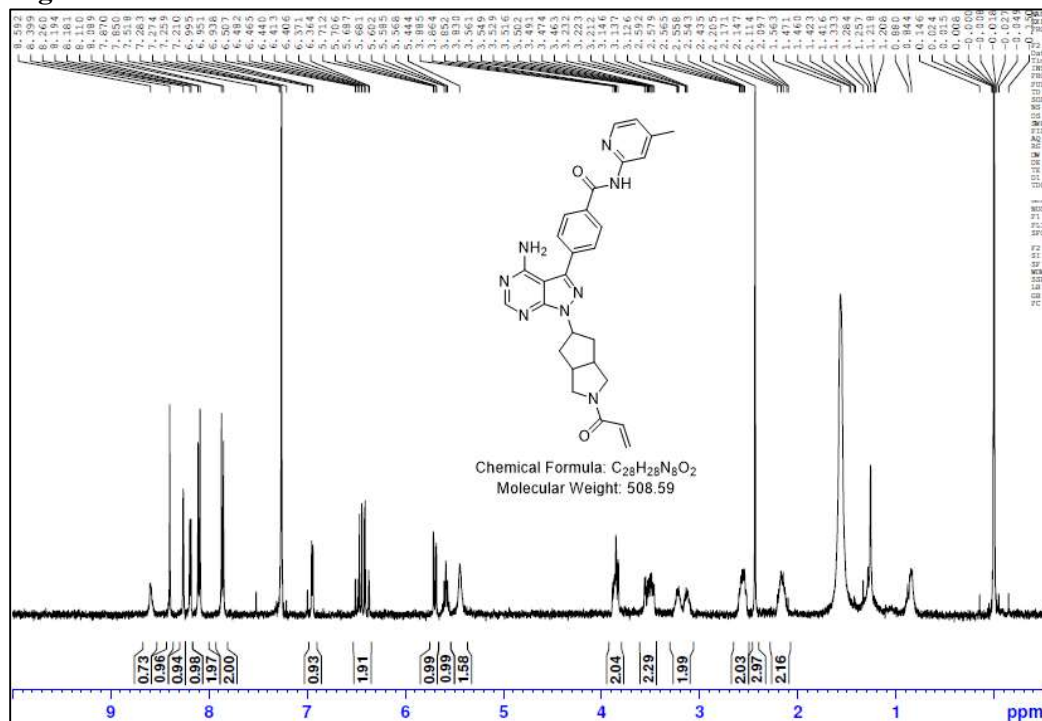
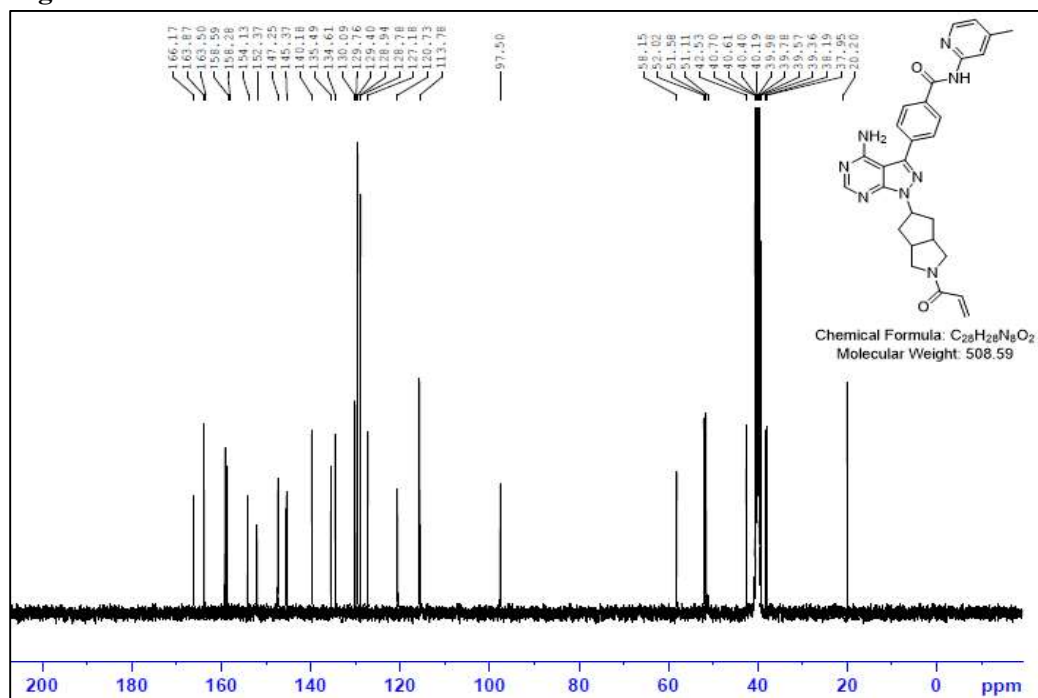
Figure 80. ^1H NMR of 32dFigure 81. ^{13}C NMR of 32d

Figure 82. ESI-MS of 32d

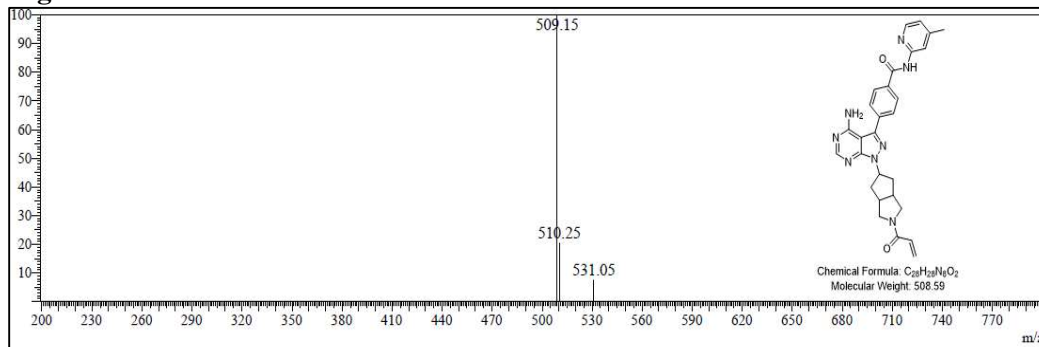


Figure 83. UPLC of 32d

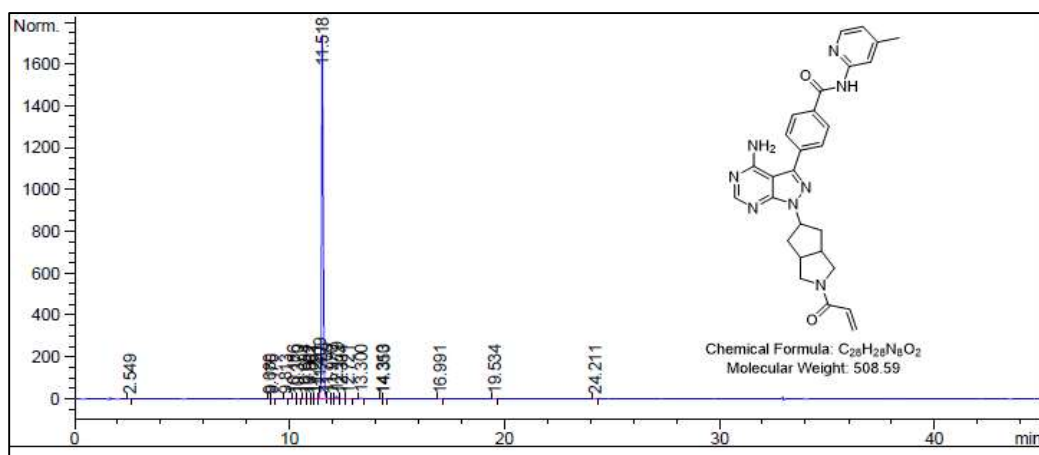
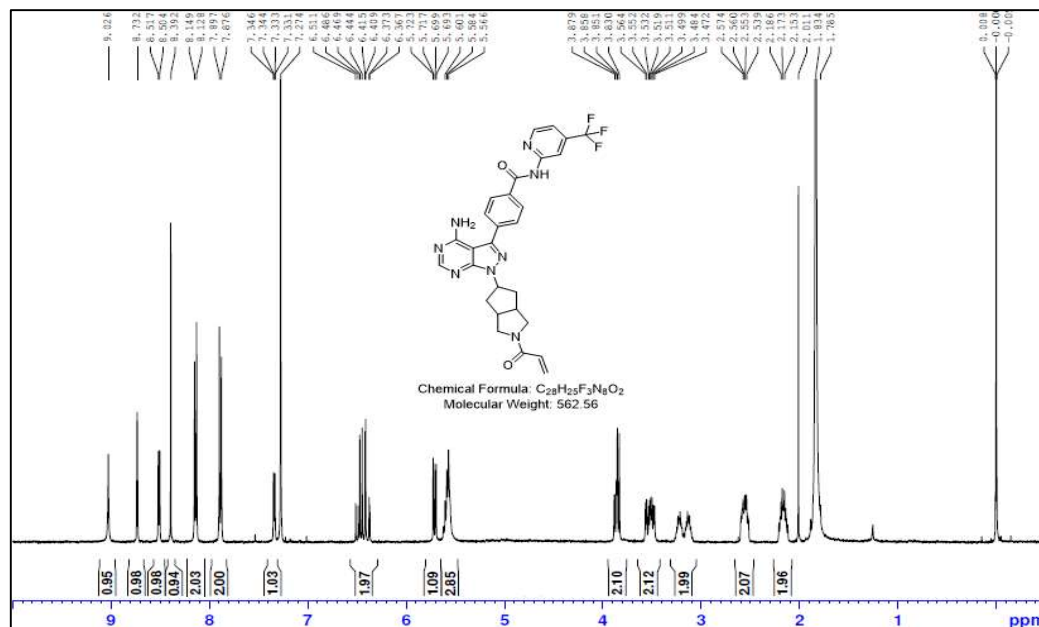
Figure 84. 1H NMR of 32e

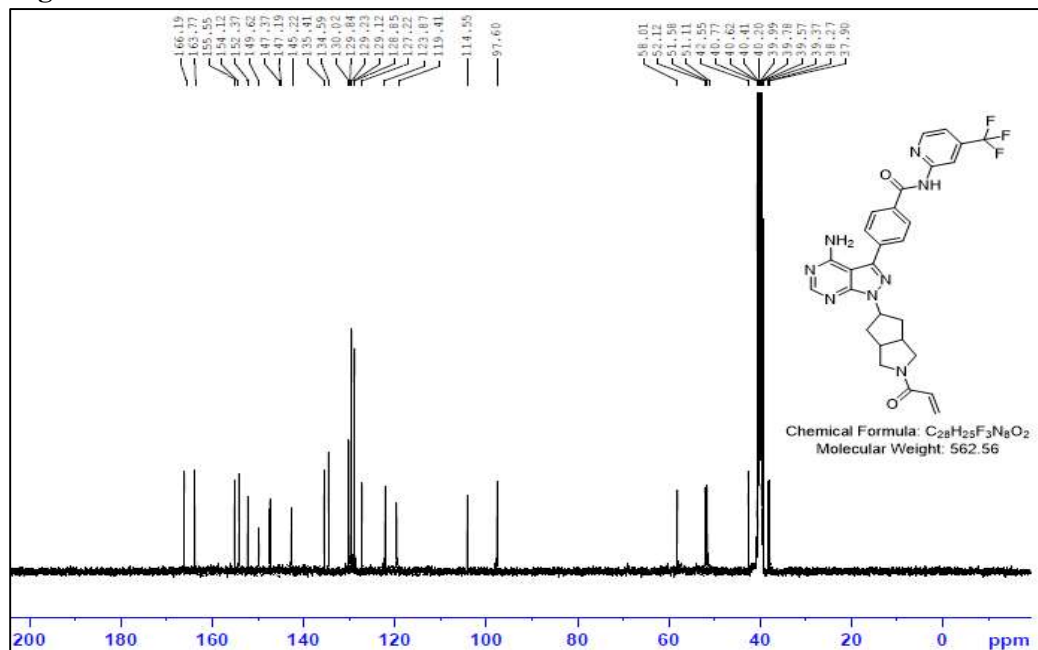
Figure 85. ^{13}C NMR of 32e

Figure 86. ESI-MS of 32e

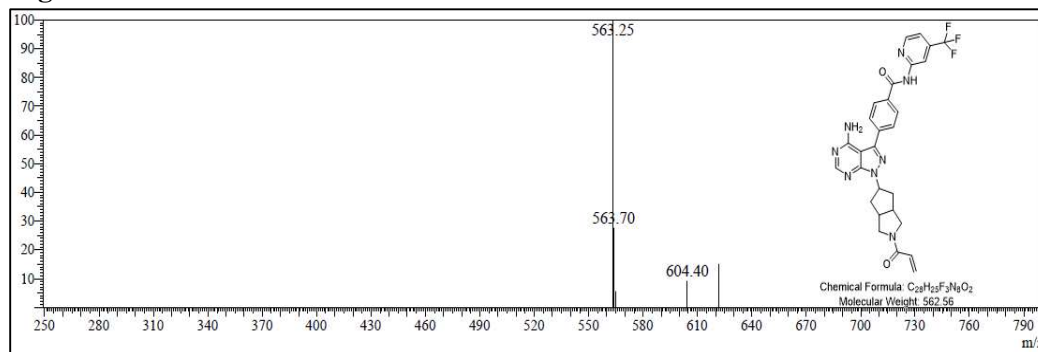


Figure 87. UPLC of 32e

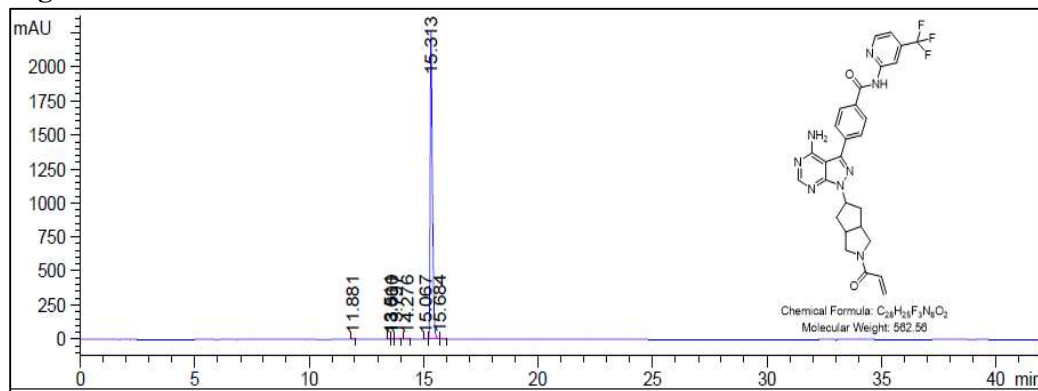


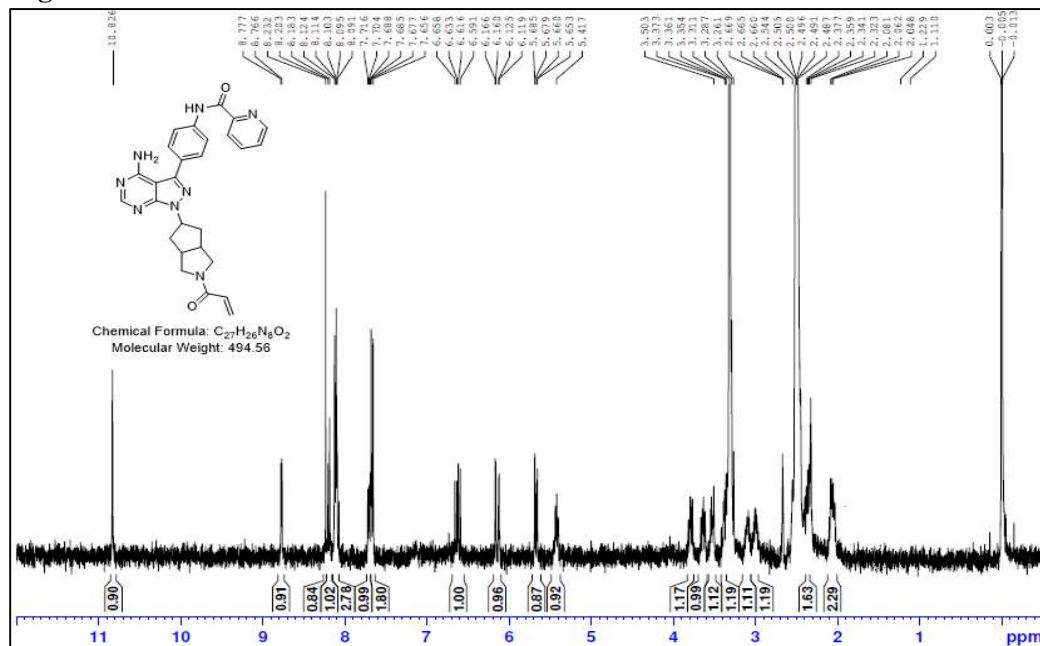
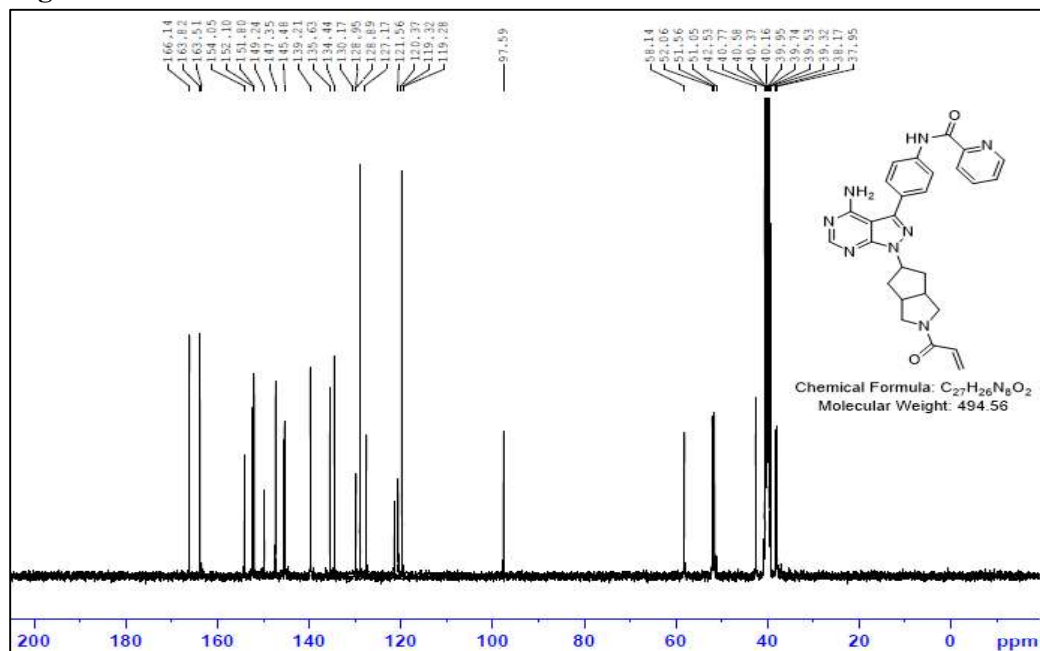
Figure 88. ^1H NMR of 32fFigure 89. ^{13}C NMR of 32f

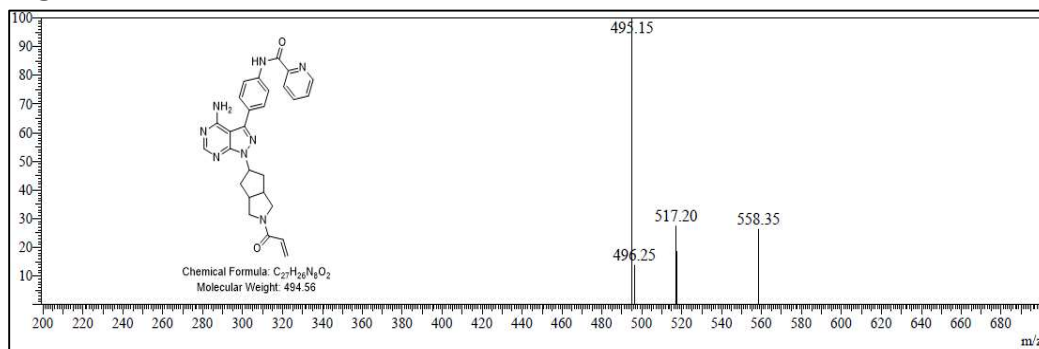
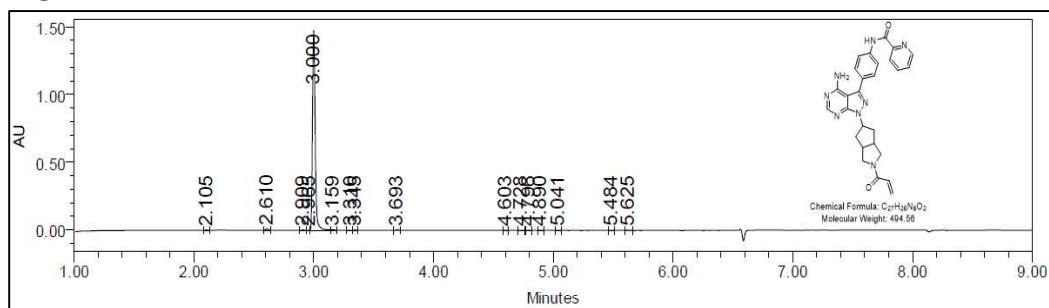
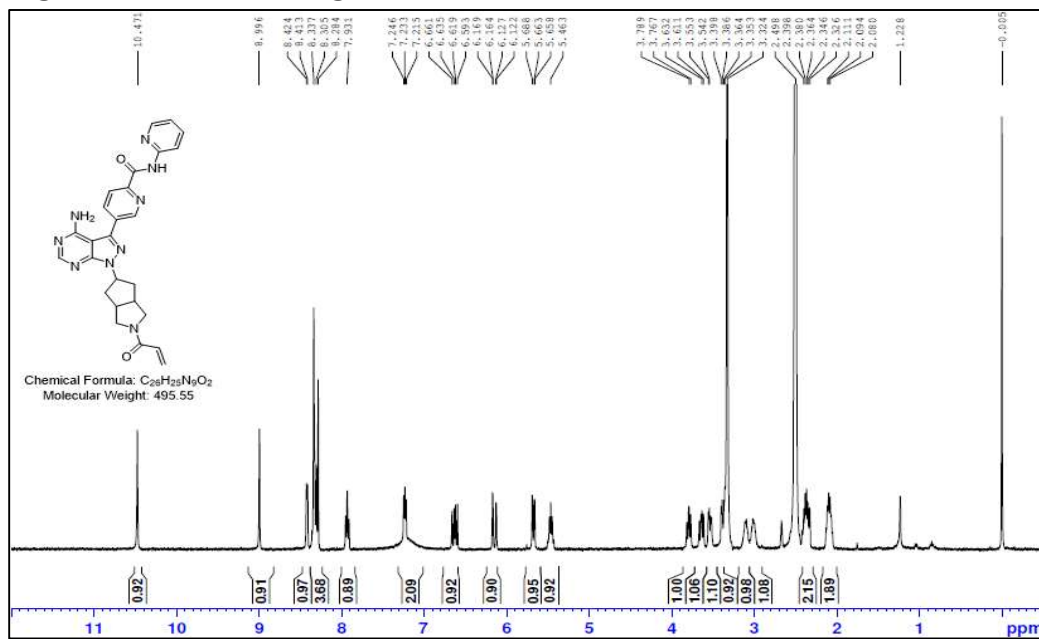
Figure 90. ESI-MS of 32f**Figure 91. UPLC of 32f****Figure 92. 1H NMR of 32g**

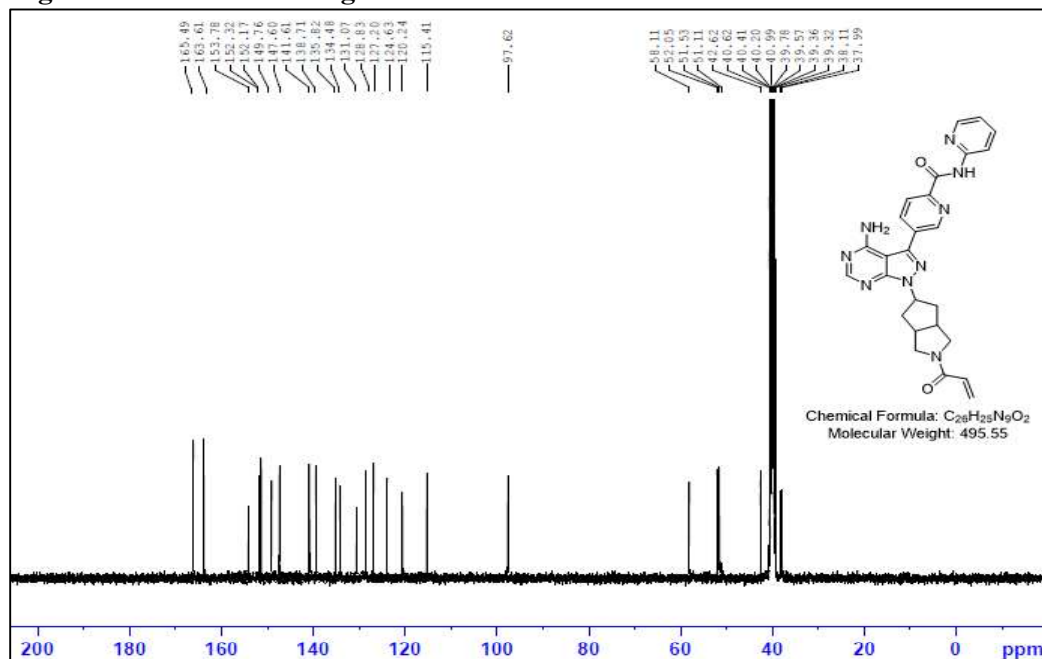
Figure 93. ^{13}C NMR of 32g

Figure 94. ESI-MS of 32g

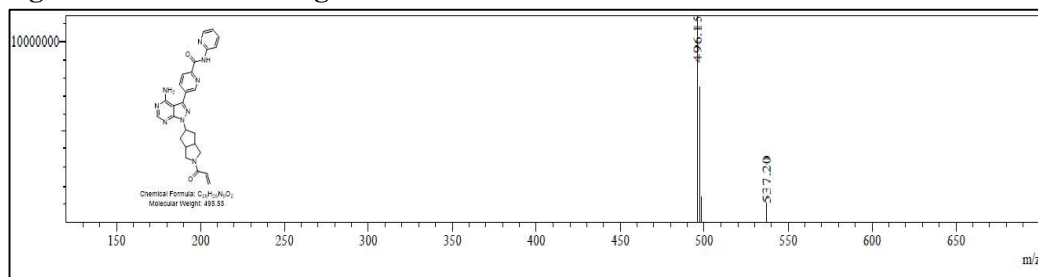


Figure 95. UPLC of 32g

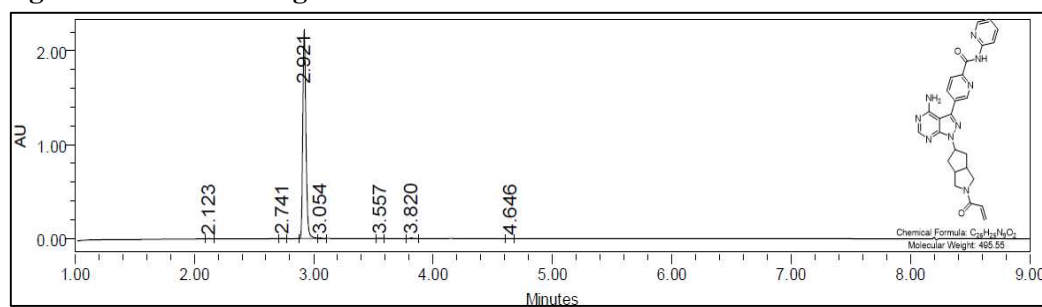


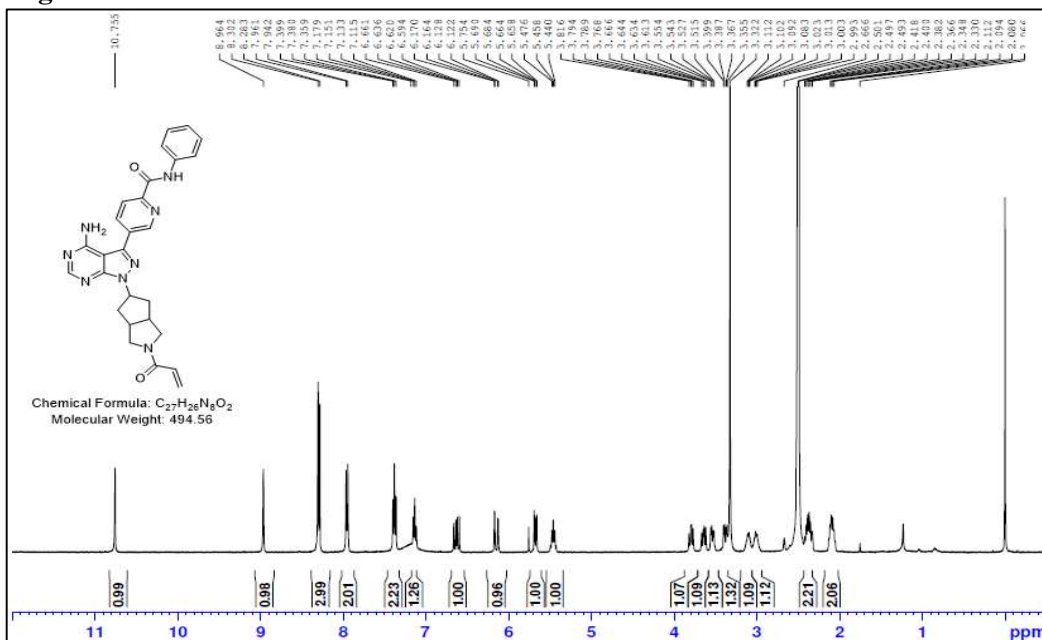
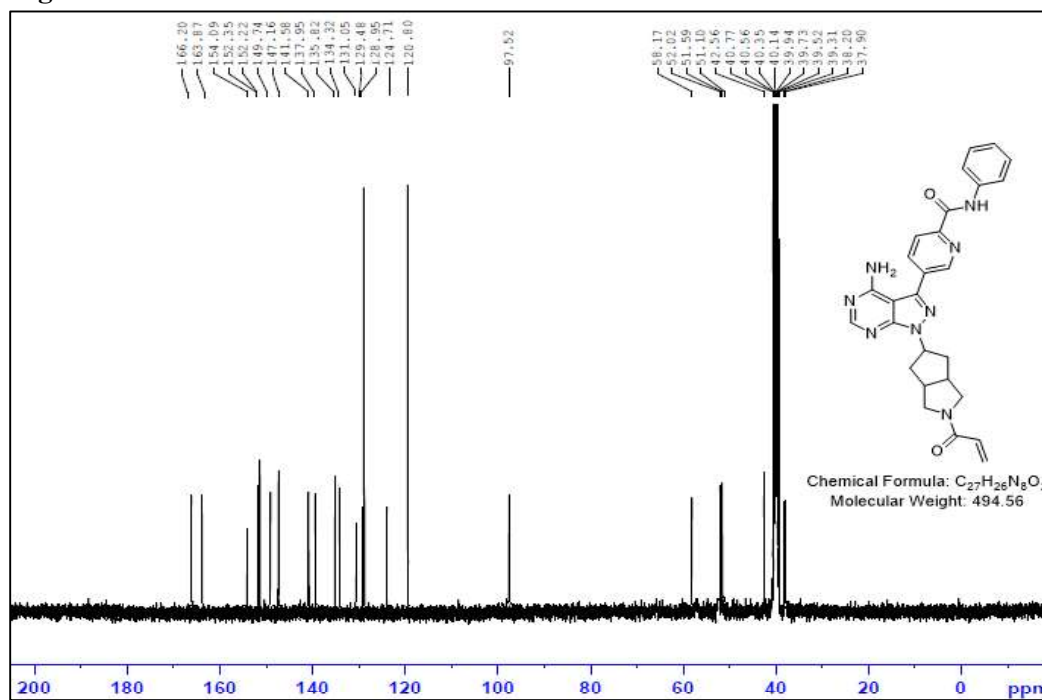
Figure 96. ^1H NMR of 32hFigure 97. ^{13}C NMR of 32h

Figure 98. ESI-MS of 32h

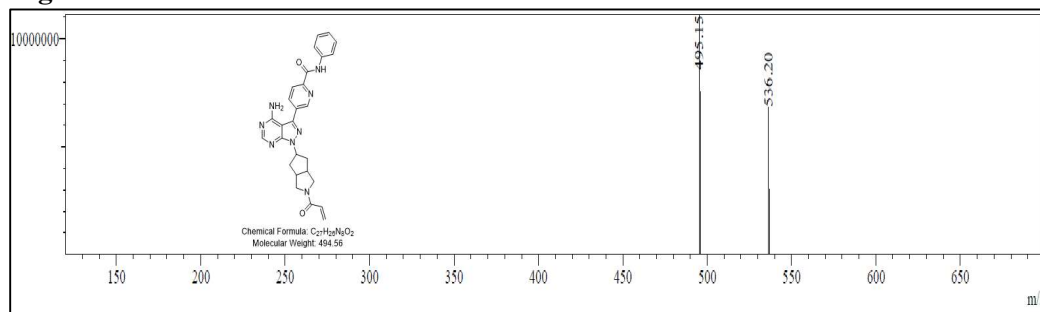


Figure 99. UPLC of 32h

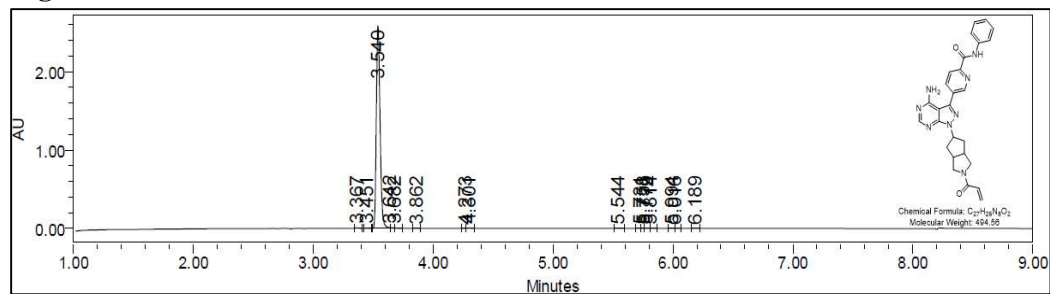
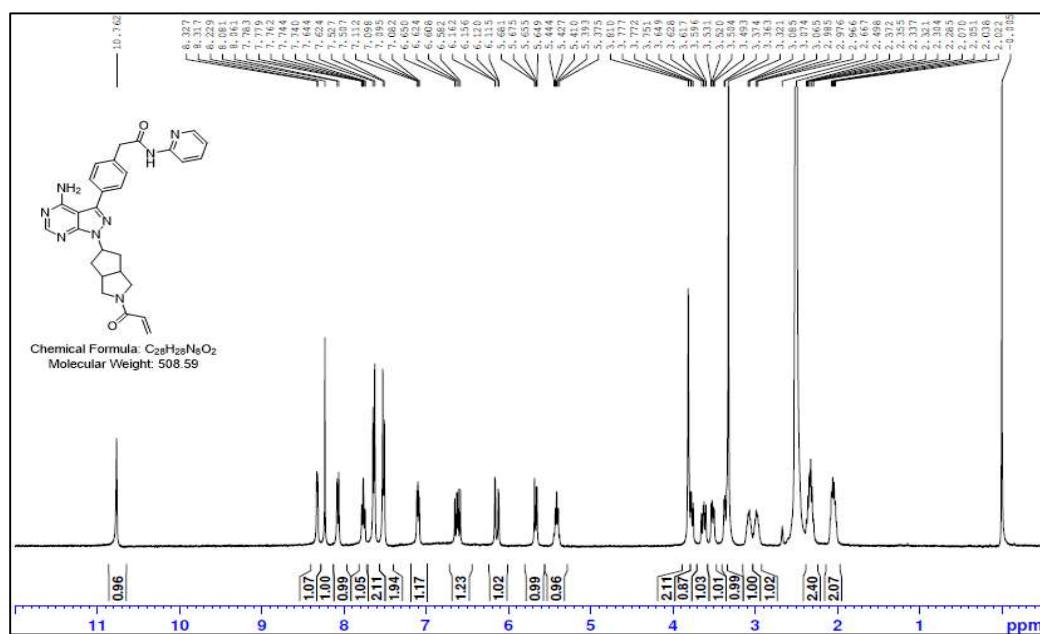
Figure 100. 1H NMR of 32i

Figure 101. ESI-MS of 32i

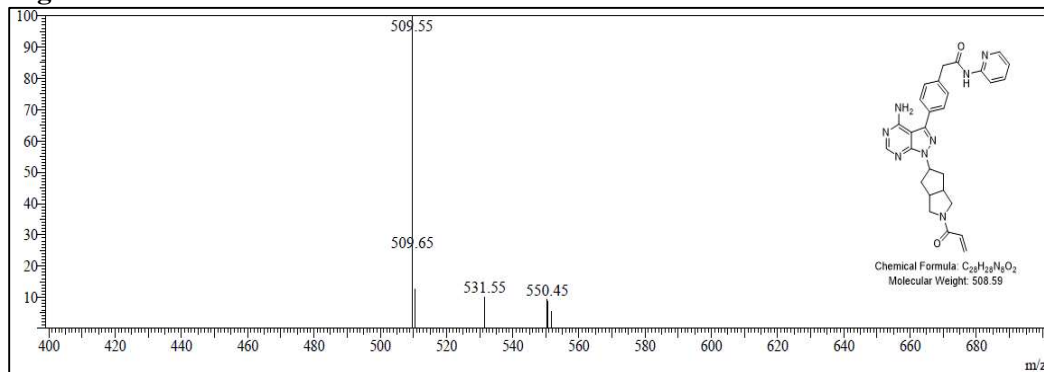


Figure 102. UPLC of 32i

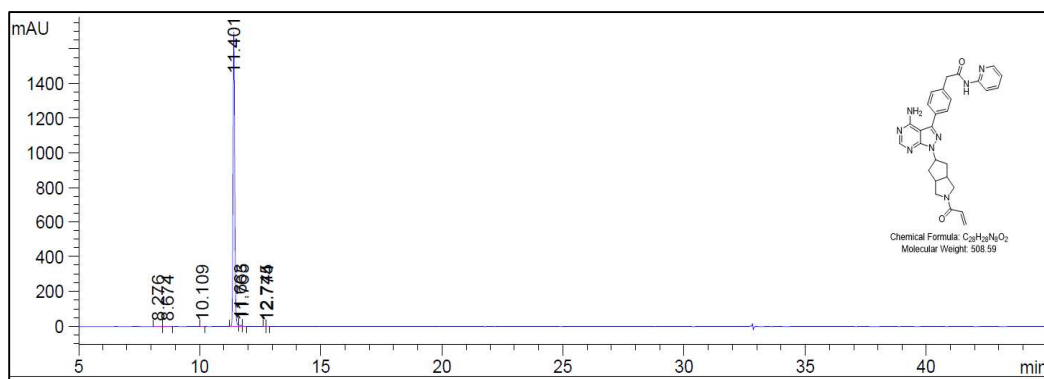
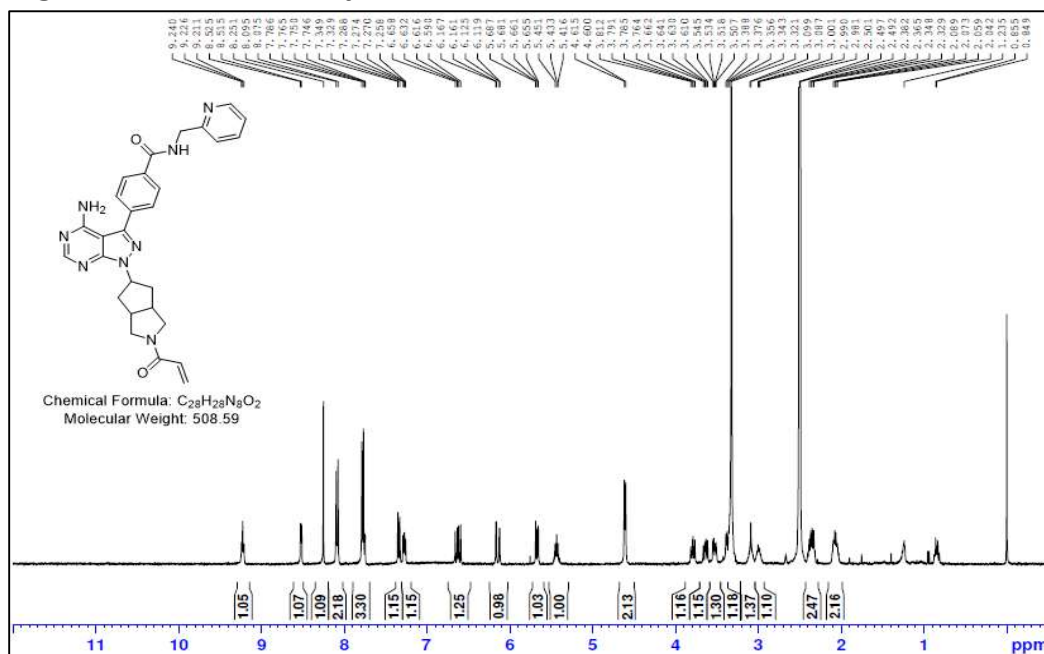
Figure 103. 1H NMR of 32j

Figure 104. ESI-MS of 32j

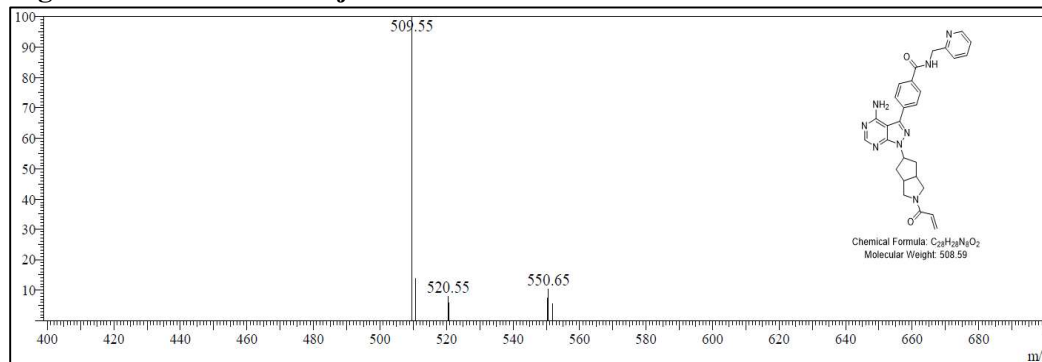


Figure 105. UPLC of 32j

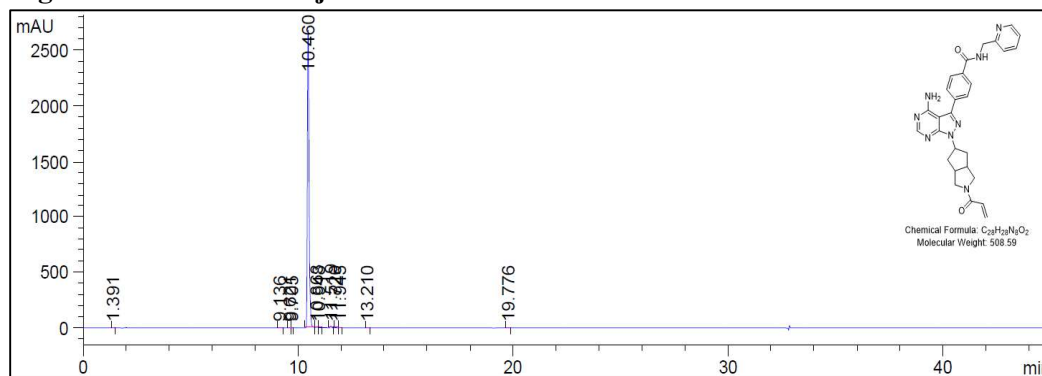
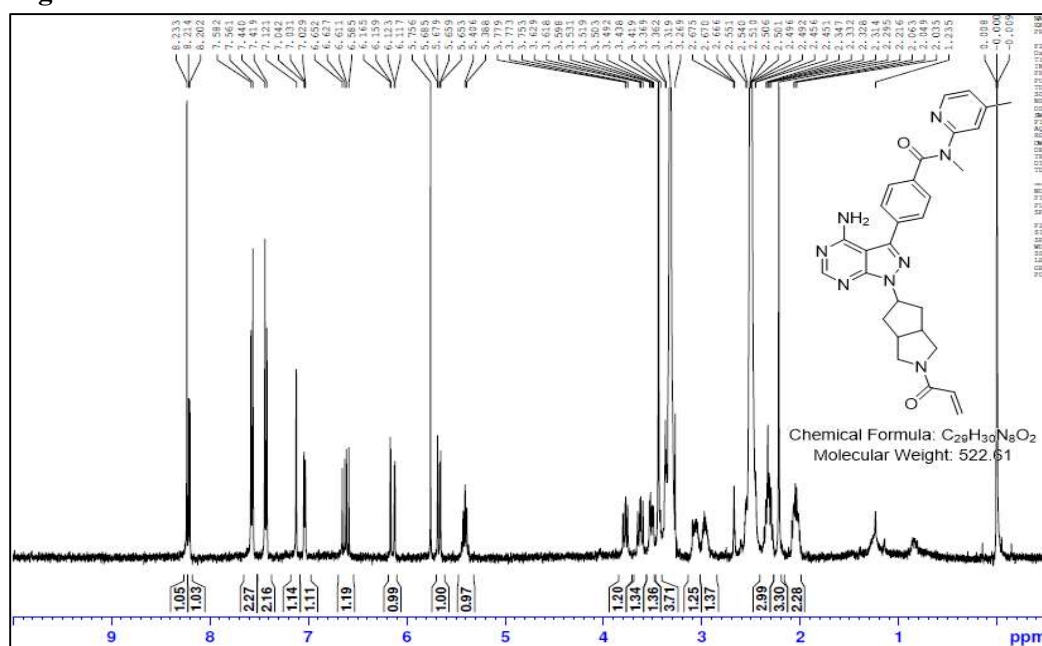
Figure 106. 1H NMR of 32k

Figure 107. ESI-MS of 32k

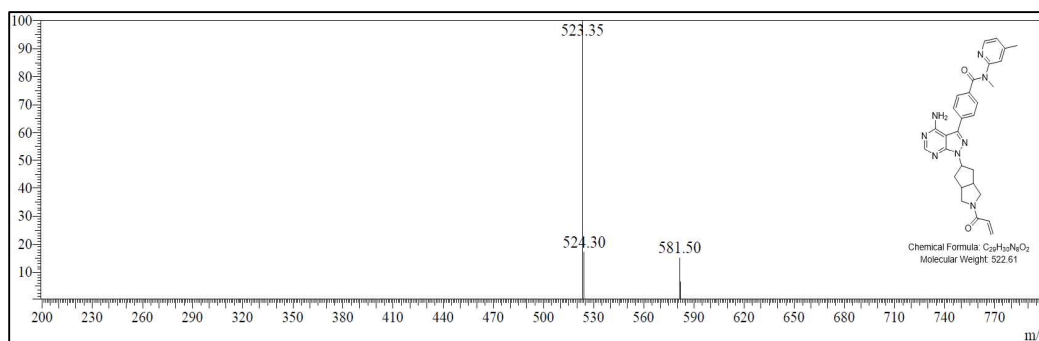


Figure 108. UPLC of 32k

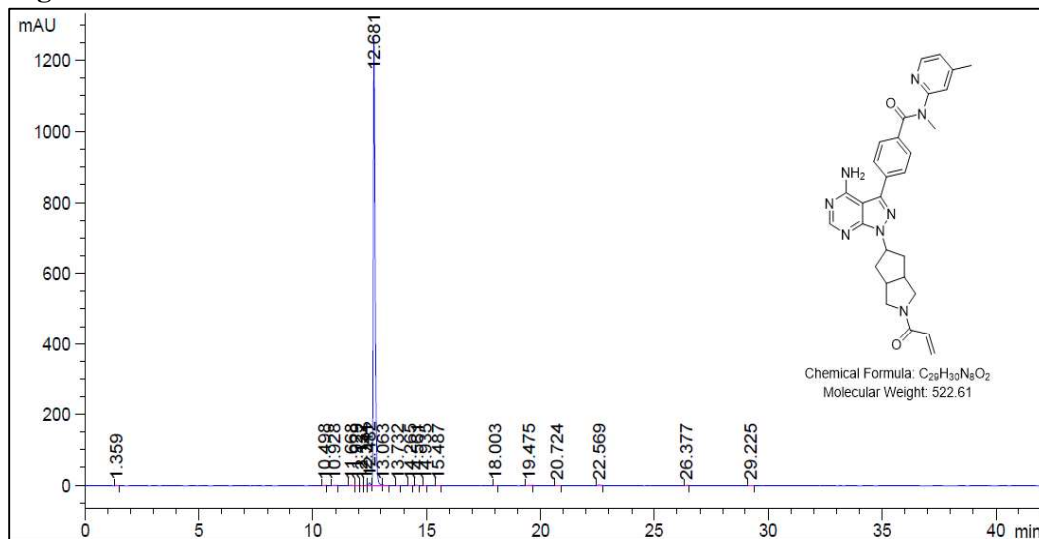


Figure 110. ESI-MS of 32l

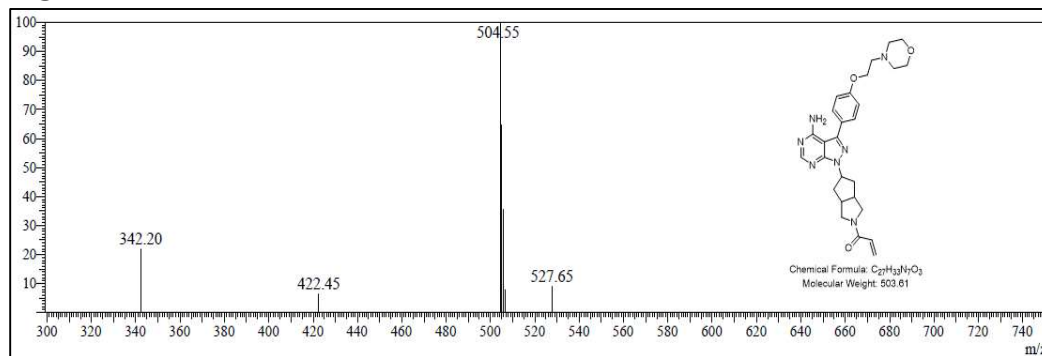


Figure 111. UPLC of 32l

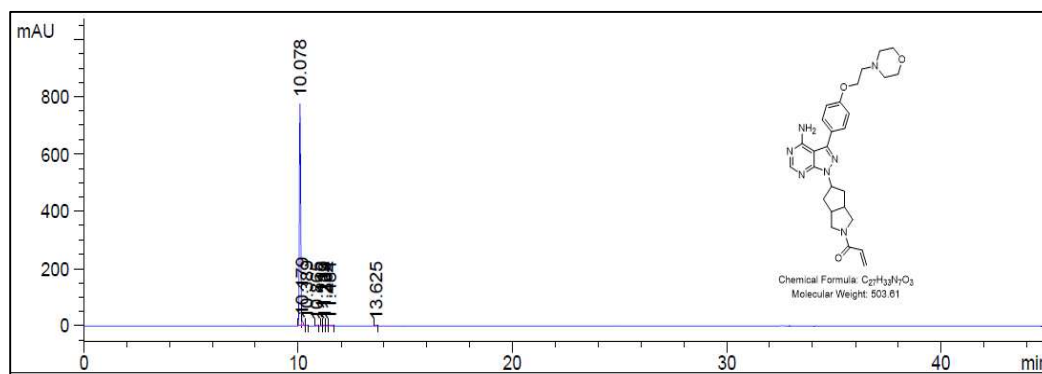
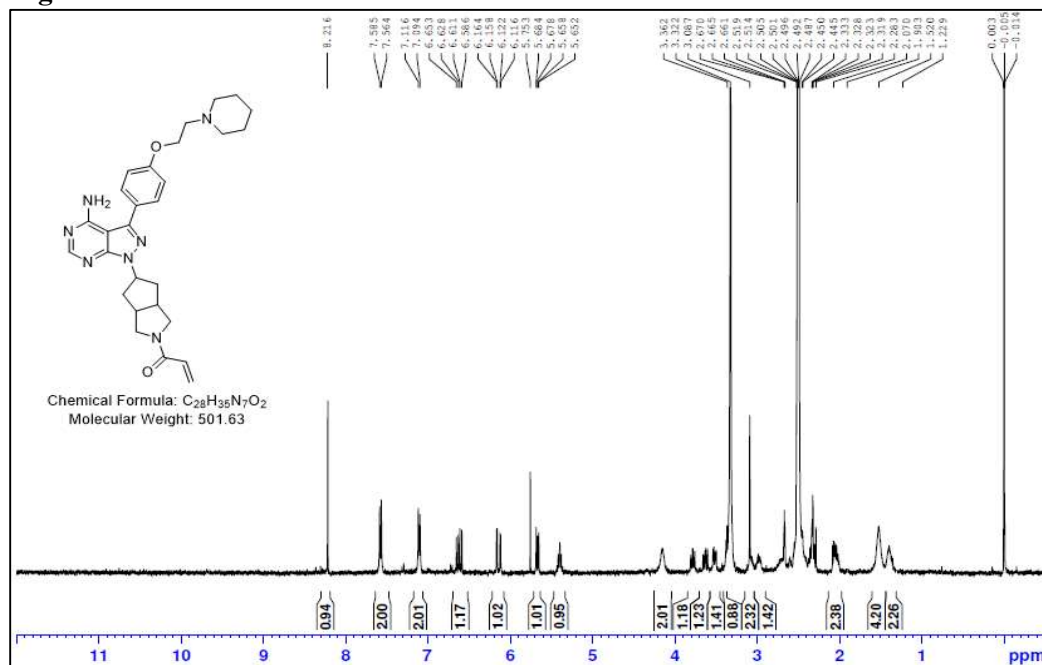
Figure 112. 1H NMR of 32m

Figure 113. ESI-MS of 32m

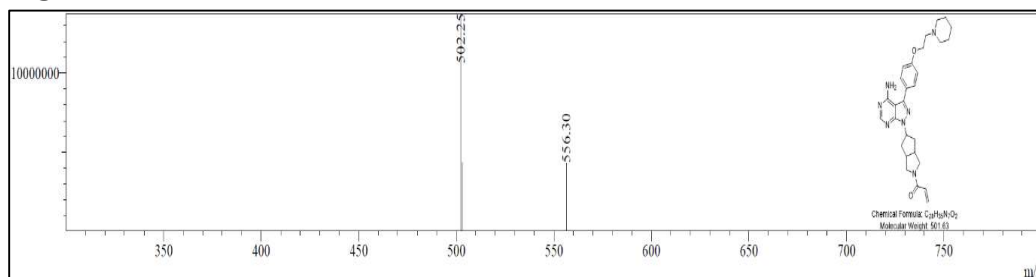


Figure 114. UPLC of 32m

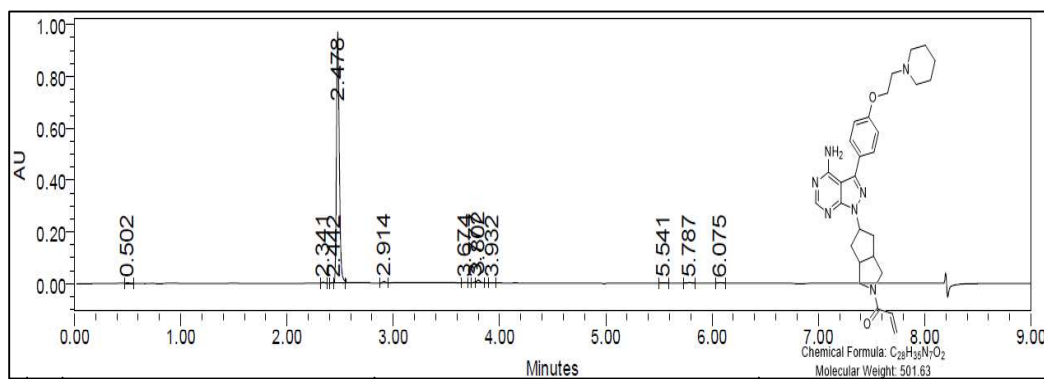
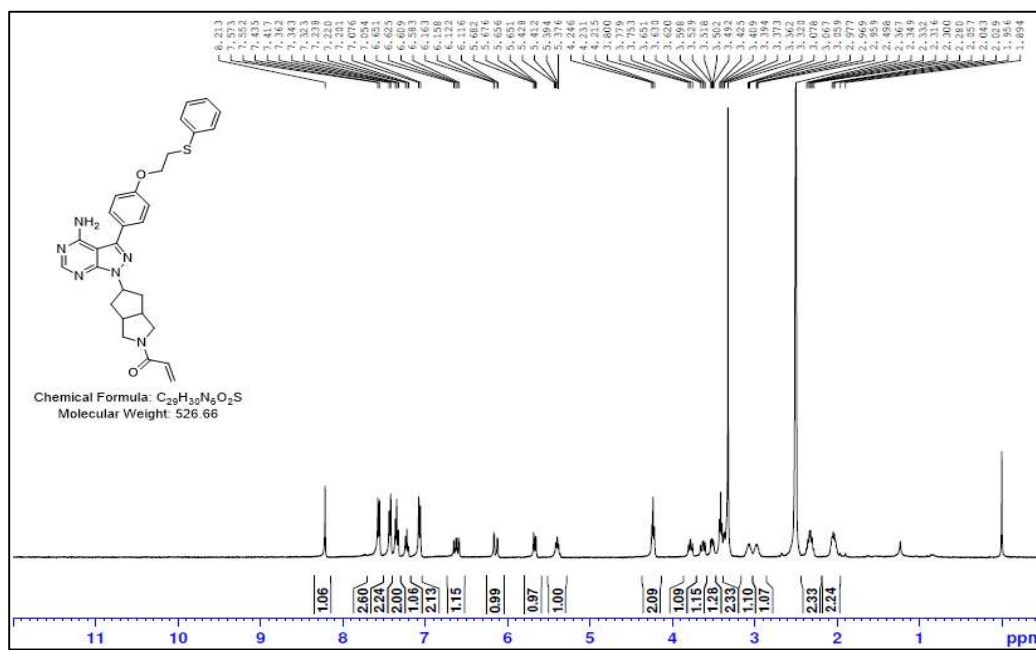
Figure 115. 1H NMR of 32n

Figure 116. ESI-MS of 32n

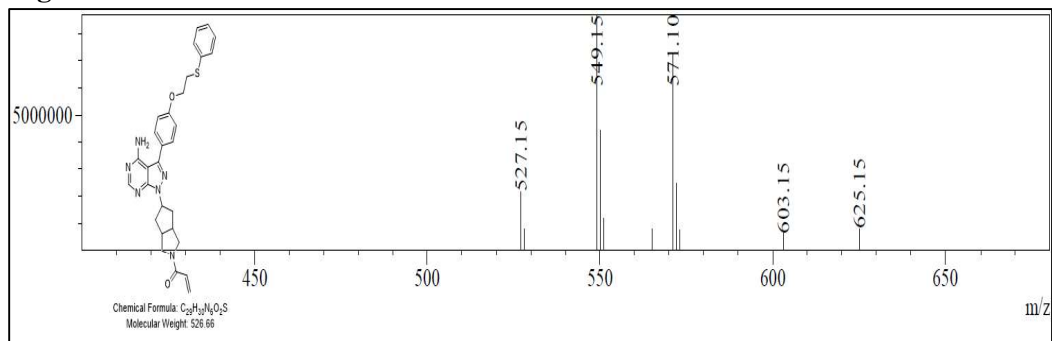


Figure 117. UPLC of 32n

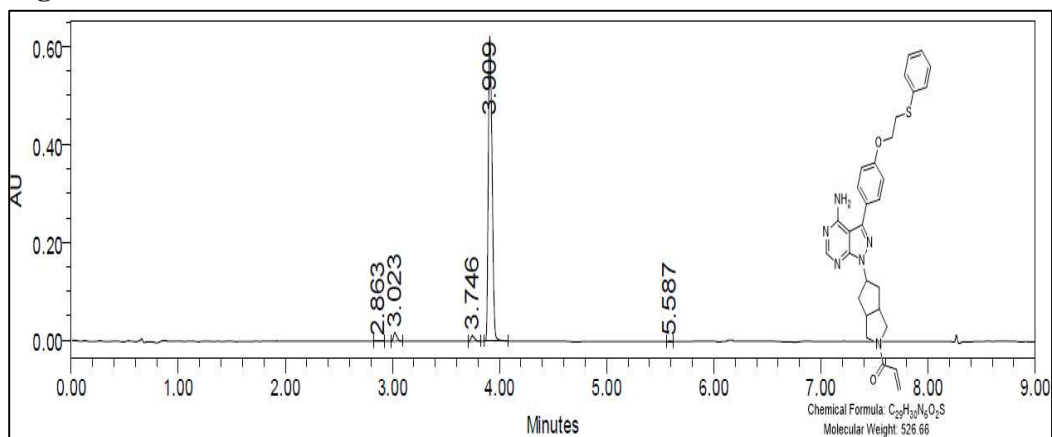
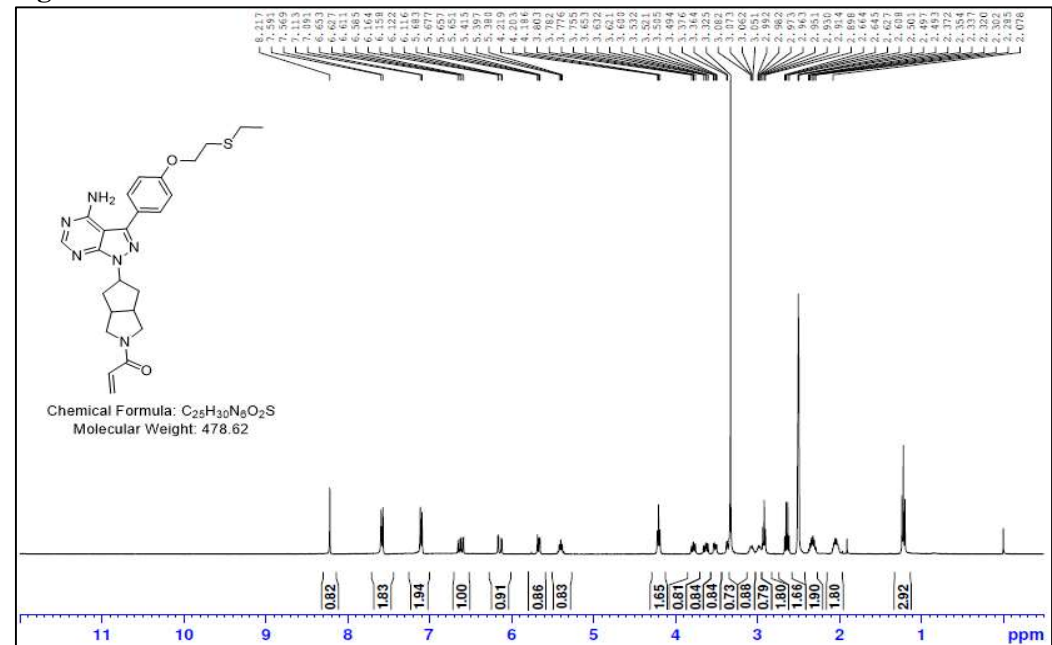
Figure 118. 1H NMR of 32o

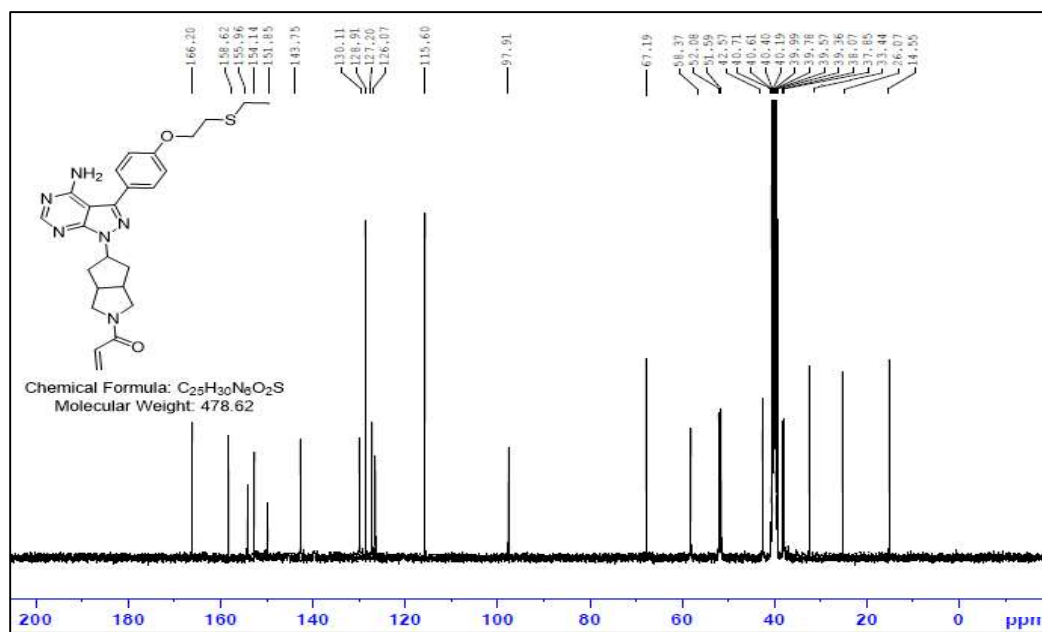
Figure 119. ^{13}C NMR of 32o

Figure 120. ESI-MS of 32o

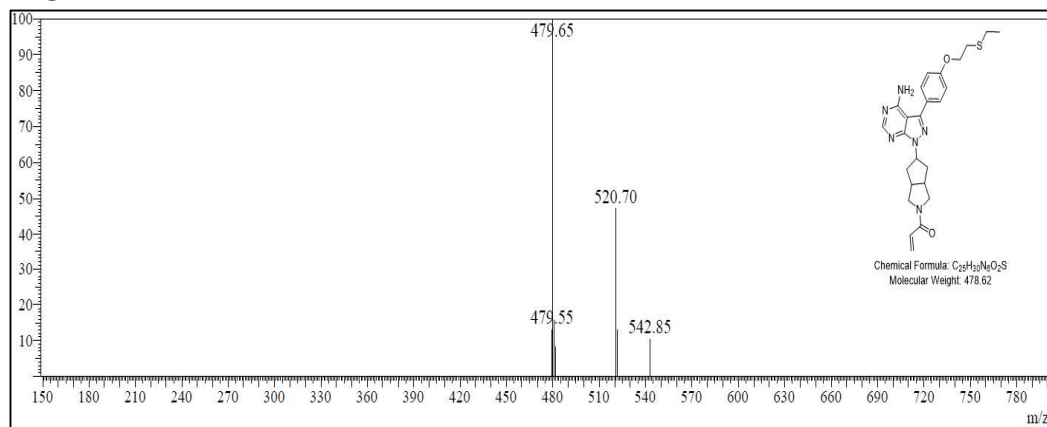


Figure 121. UPLC of 32o

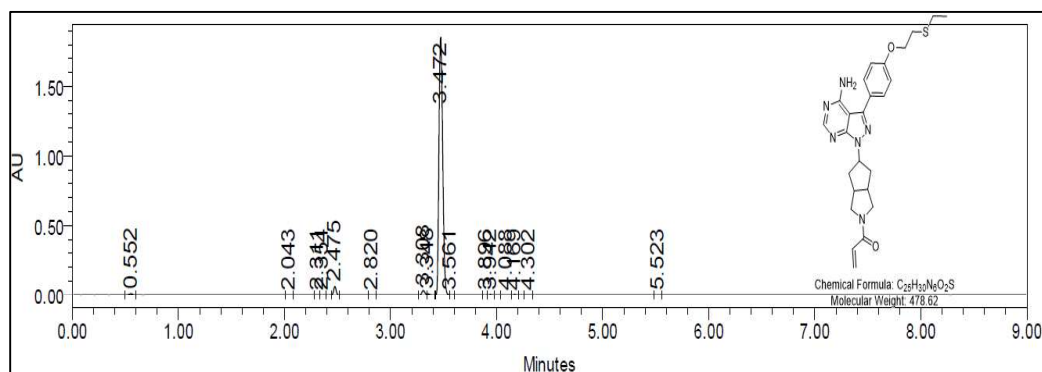


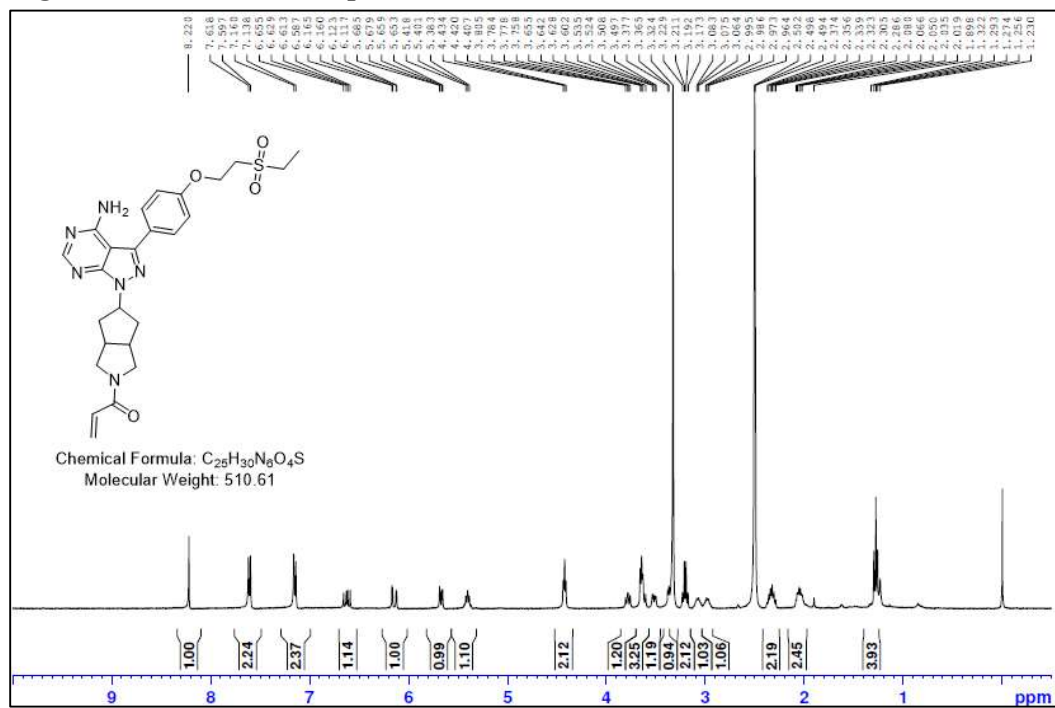
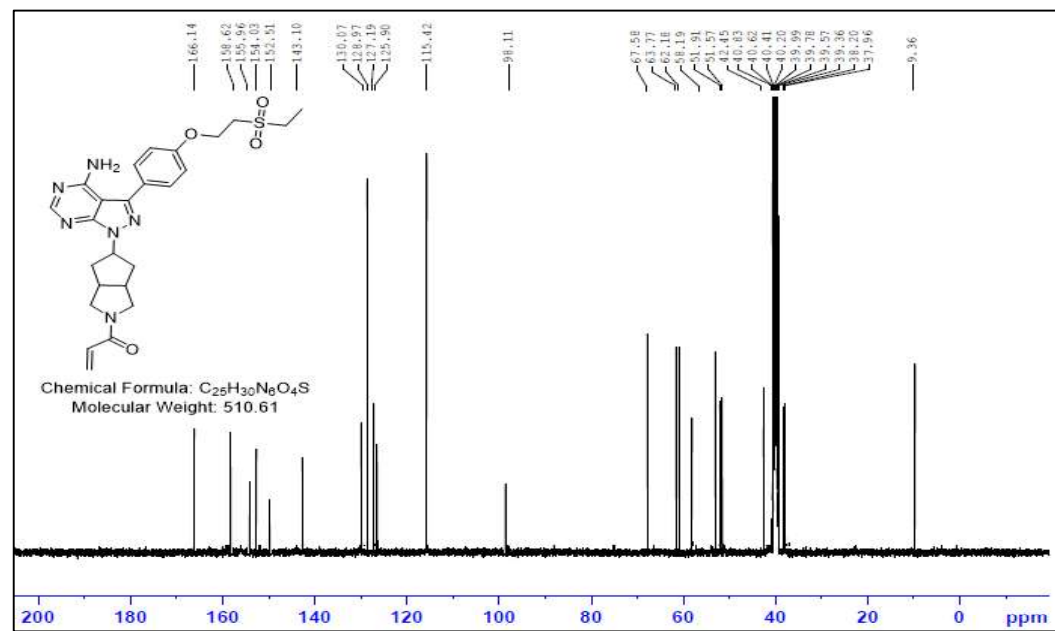
Figure 122. ^1H NMR of 32pFigure 123. ^{13}C NMR of 32p

Figure 124. ESI-MS of 32p

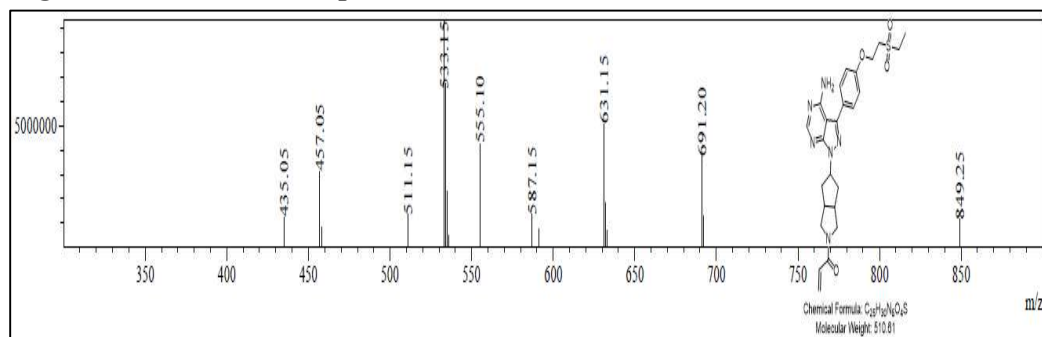


Figure 125. UPLC of 32p

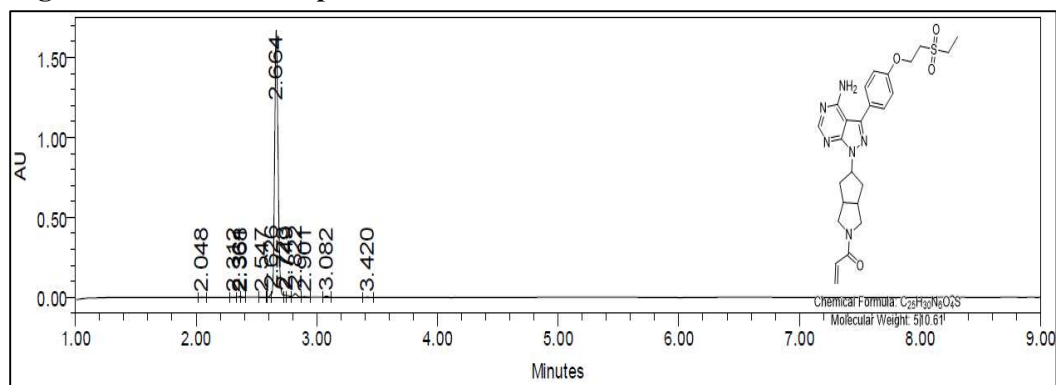
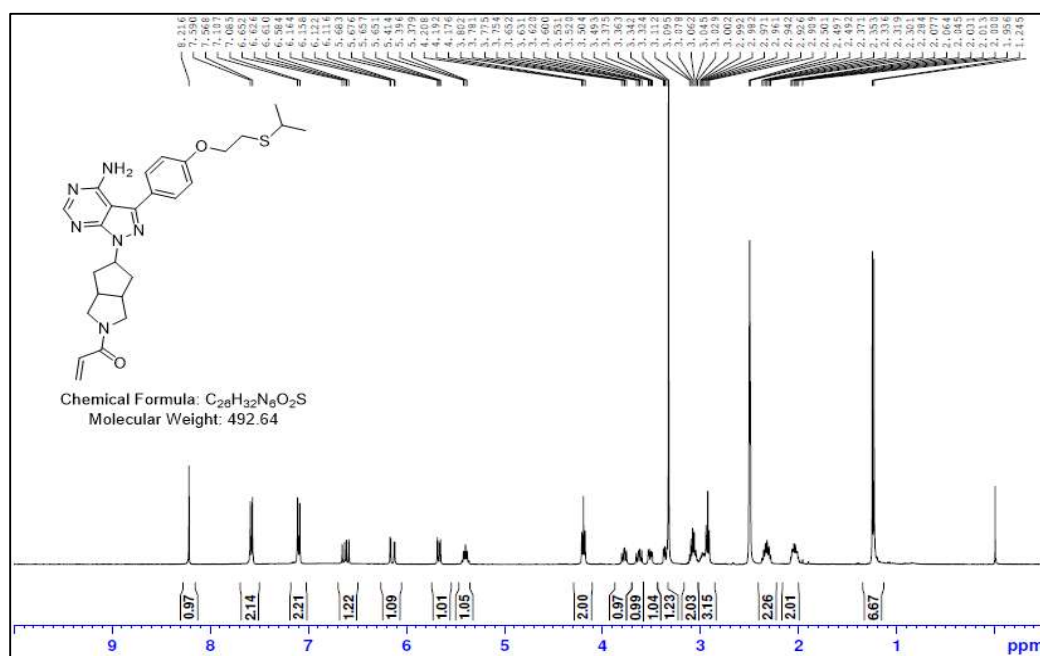
Figure 126. 1H NMR of 32q

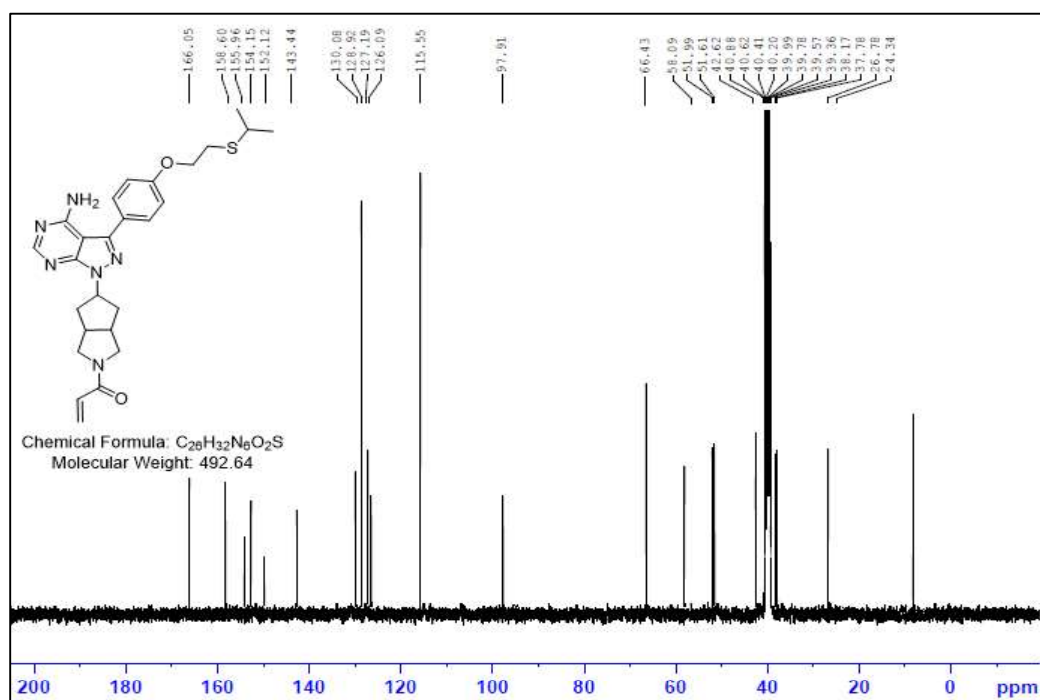
Figure 127. ^{13}C NMR of 32q

Figure 128. ESI-MS of 32q

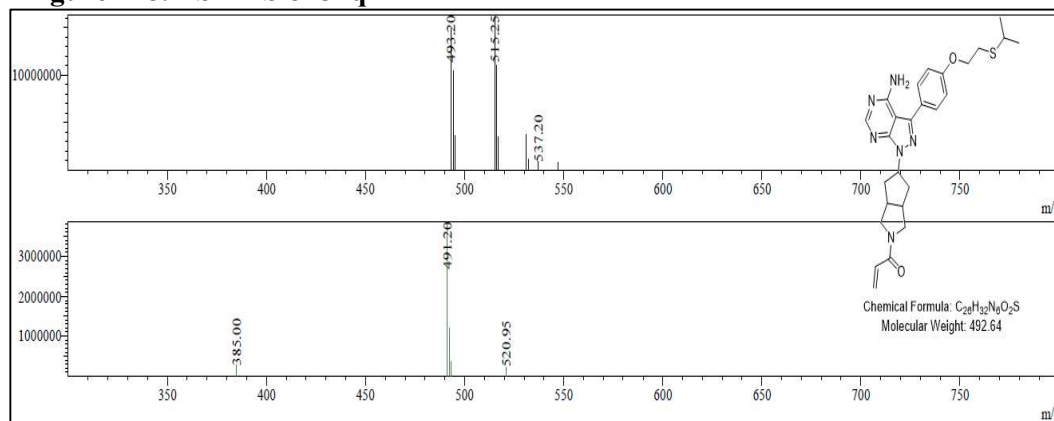


Figure 129. UPLC of 32q

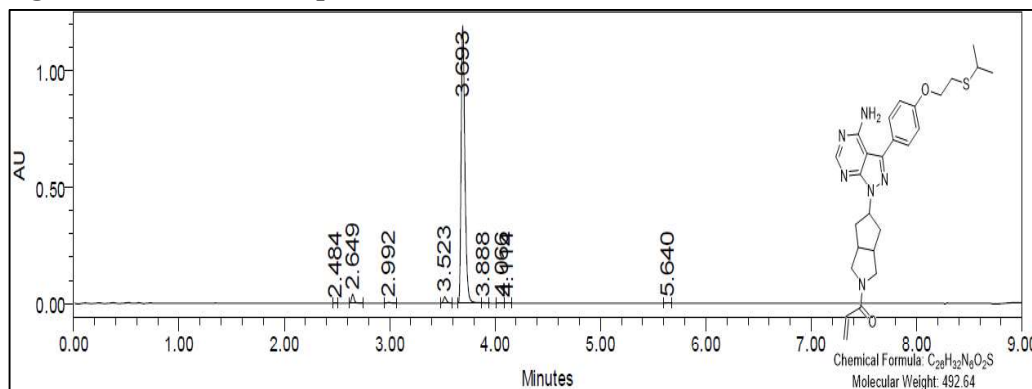


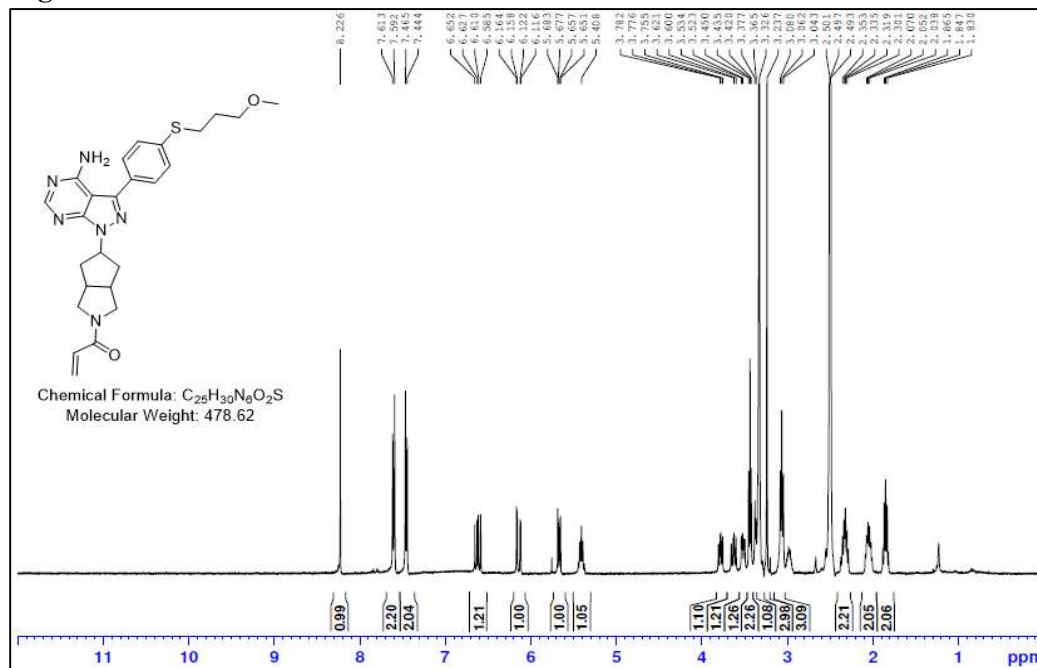
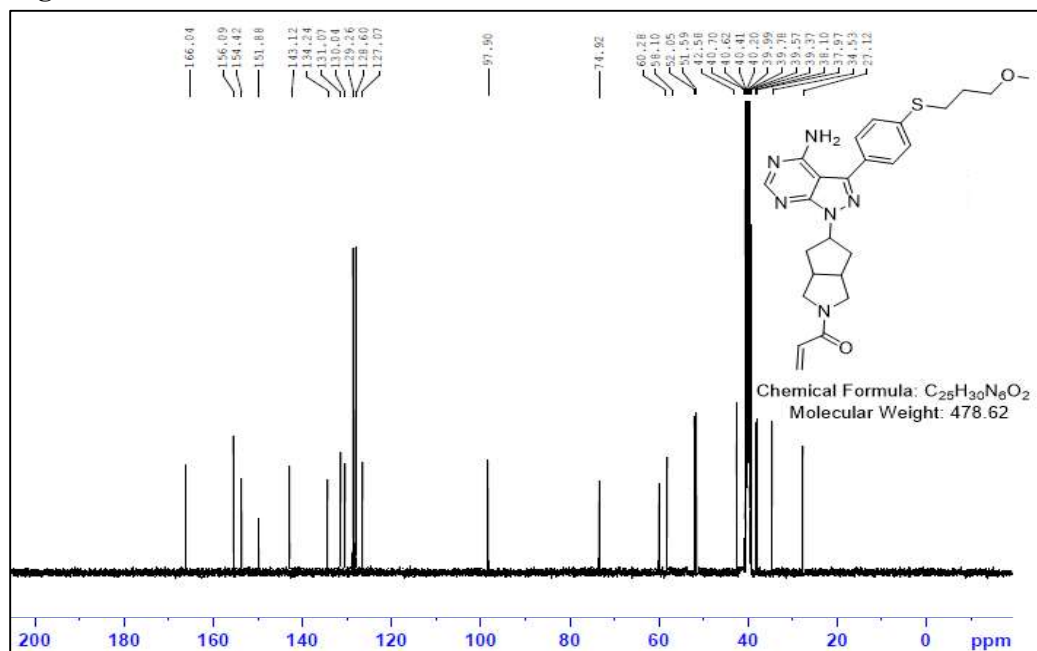
Figure 130. ^1H NMR of 32rFigure 131. ^{13}C NMR of 32r

Figure 132. ESI-MS of 32r

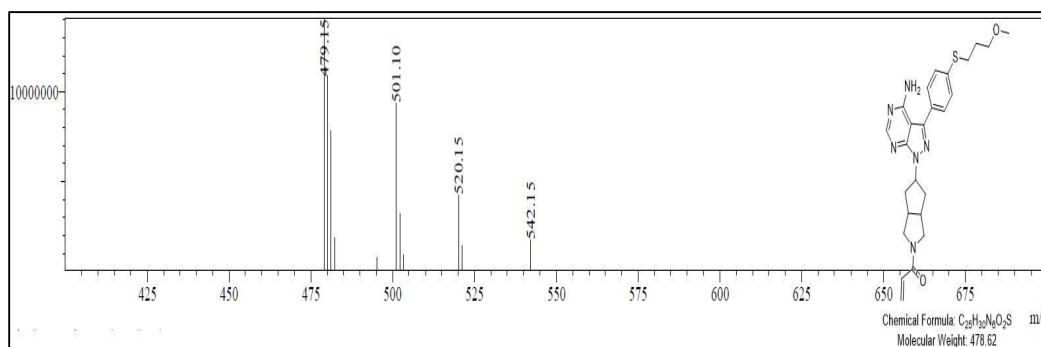


Figure 133. UPLC of 32r

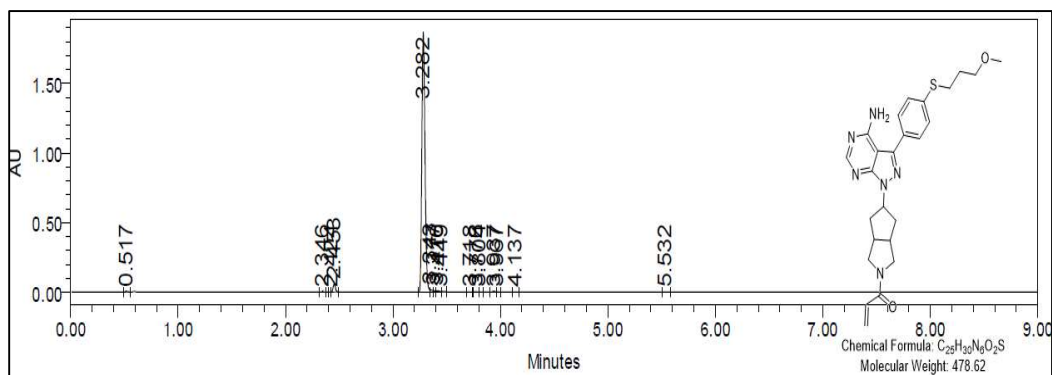
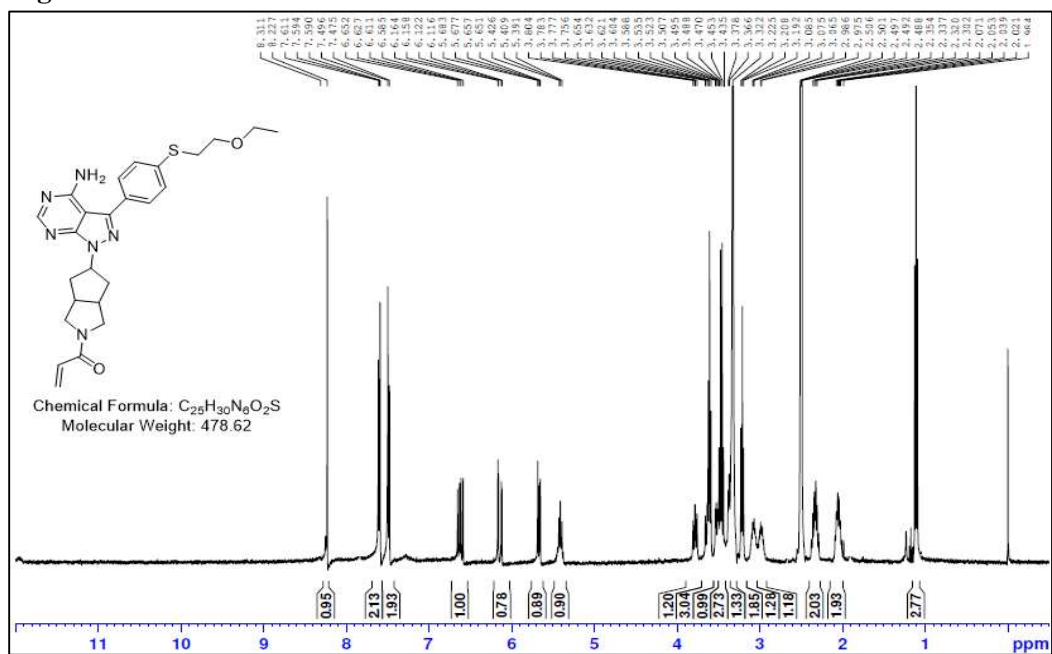
Figure 134. 1H NMR of 32s

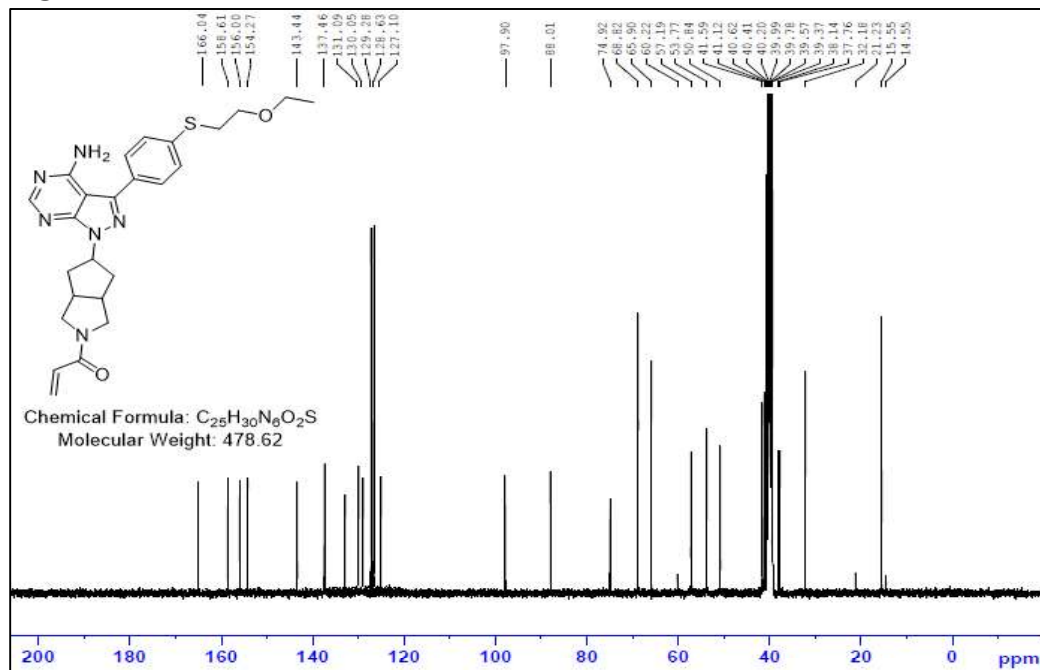
Figure 135. ^{13}C NMR of 32s

Figure 136. ESI-MS of 32s

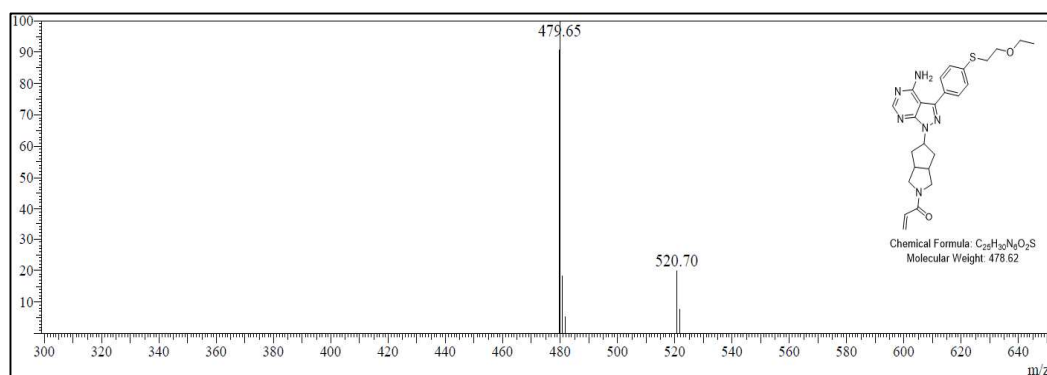


Figure 137. UPLC of 32s

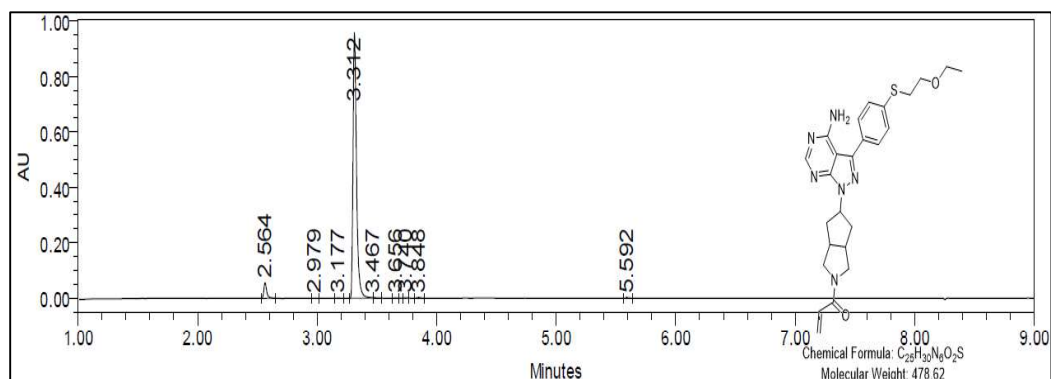


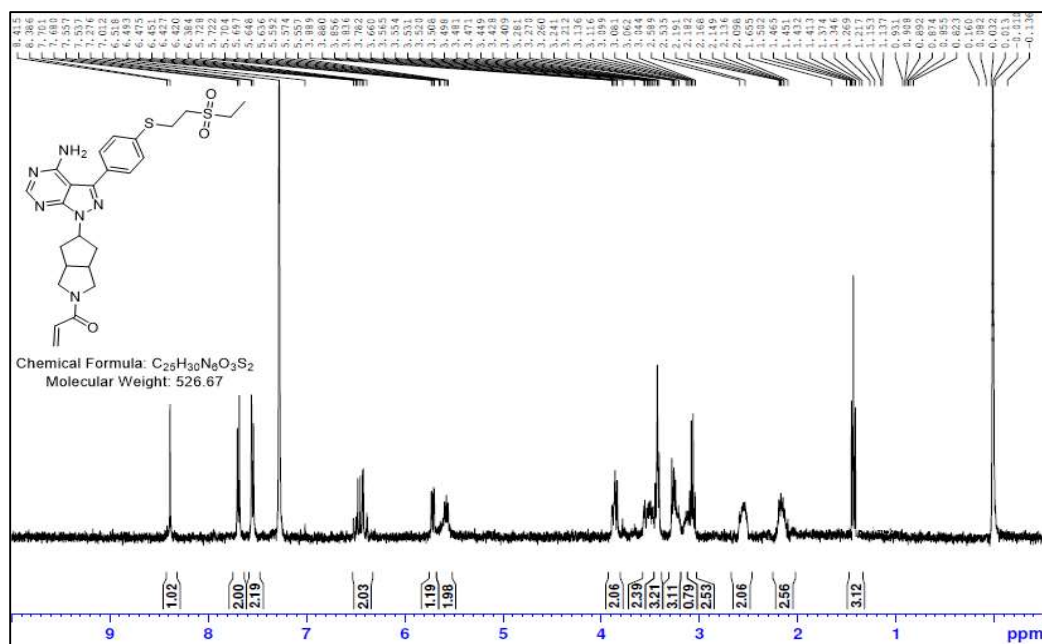
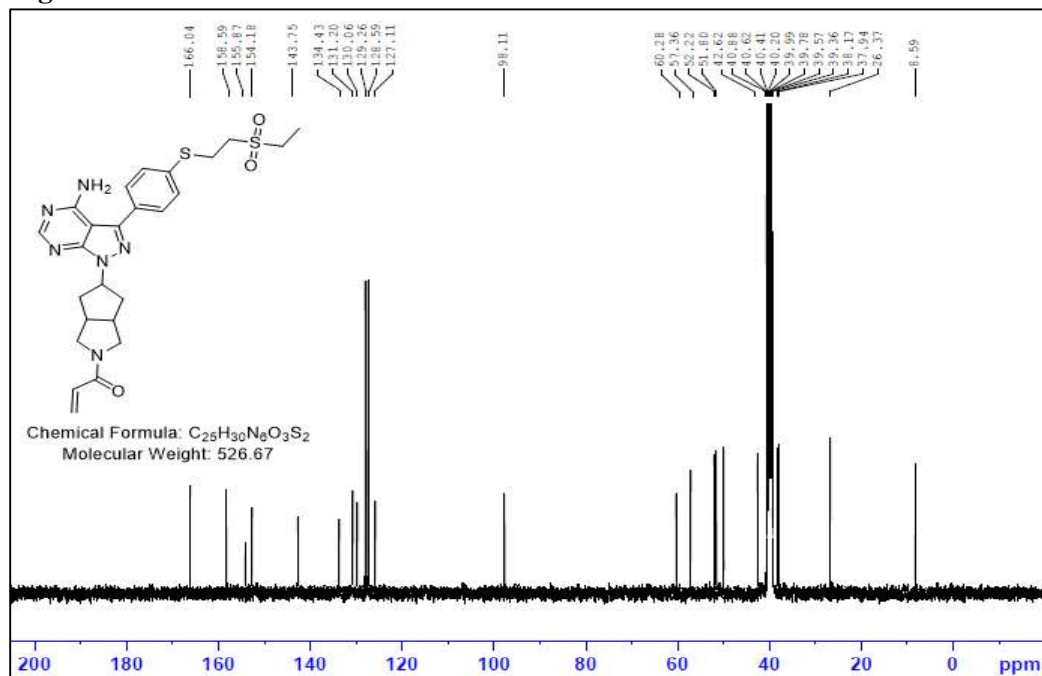
Figure 138. ^1H NMR of 32tFigure 139. ^{13}C NMR of 32t

Figure 140. ESI-MS of 32t

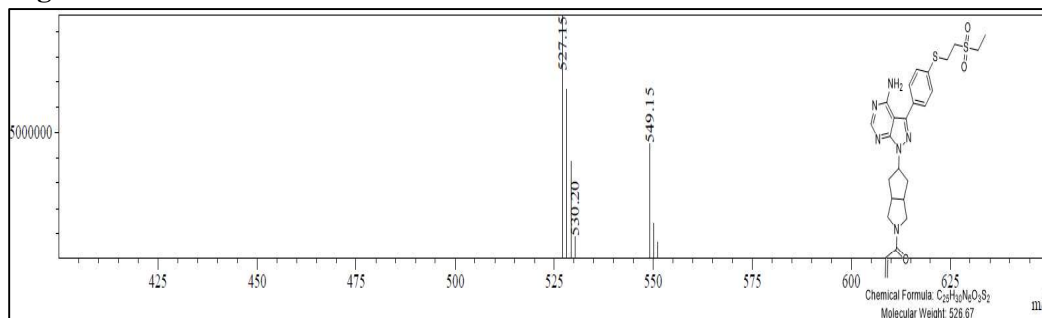


Figure 141. UPLC of 32t

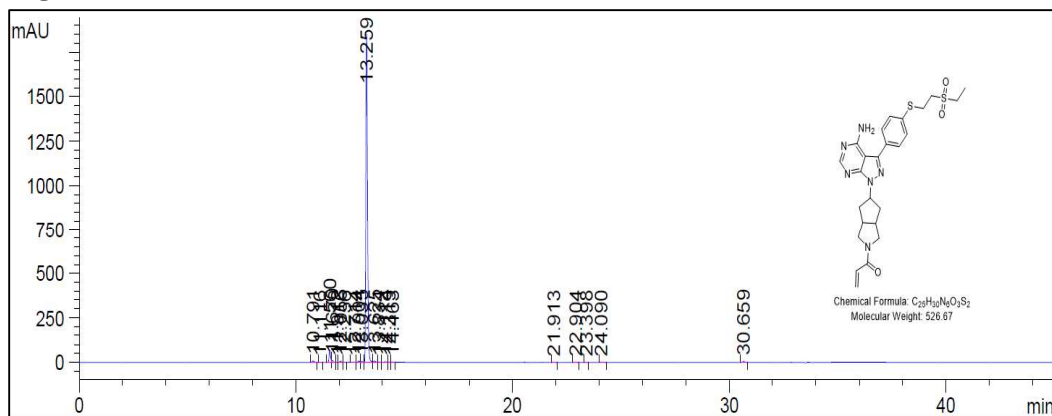
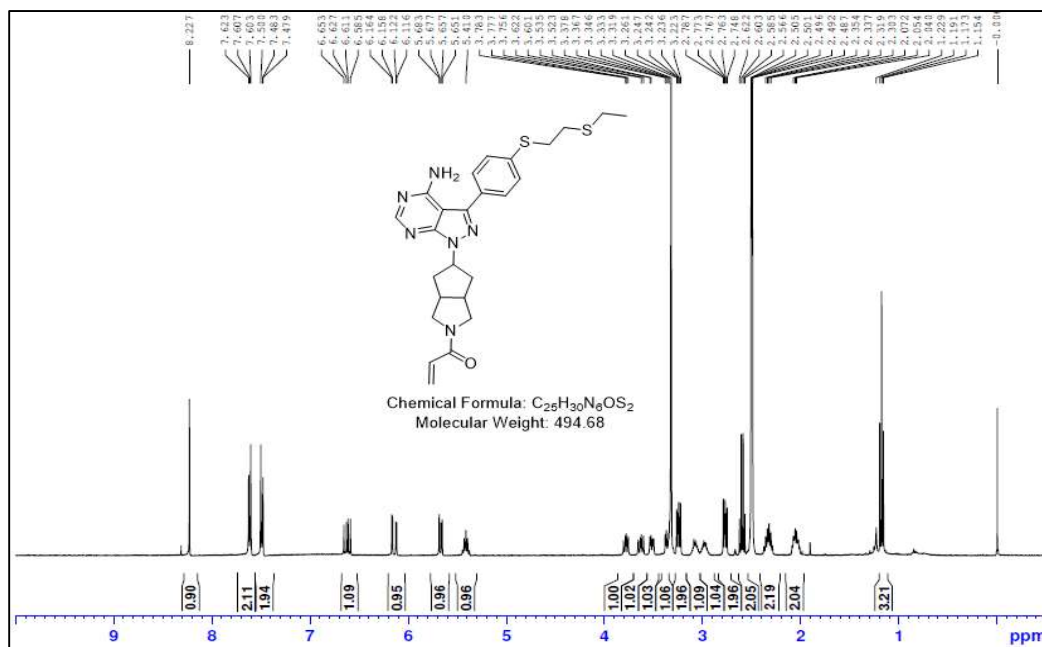
Figure 142. 1H NMR of 32u

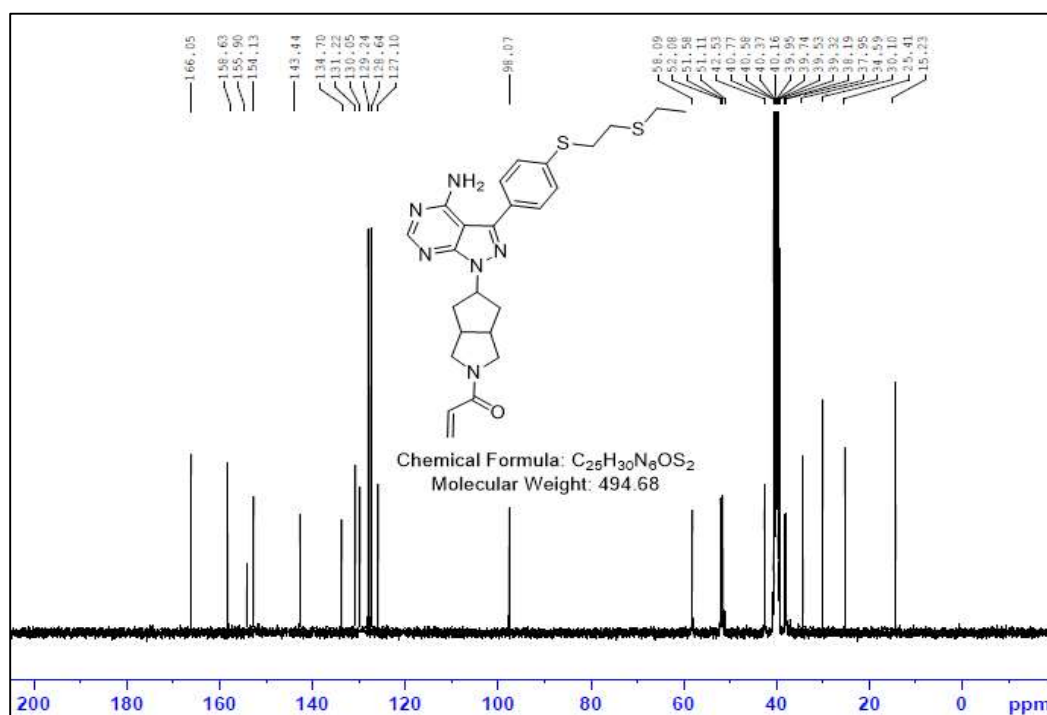
Figure 143. ^{13}C NMR of 32u

Figure 144. ESI-MS of 32u

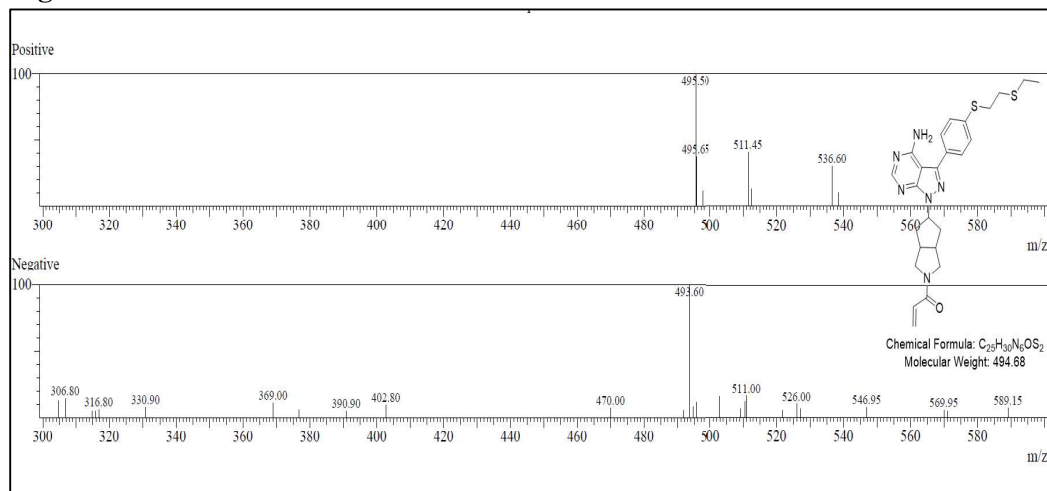


Figure 145. UPLC of 32u

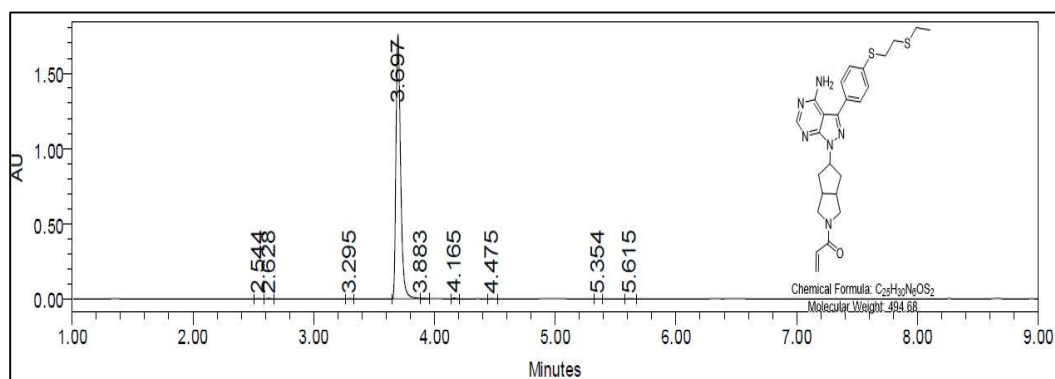


Figure 146. ^1H NMR of 32v

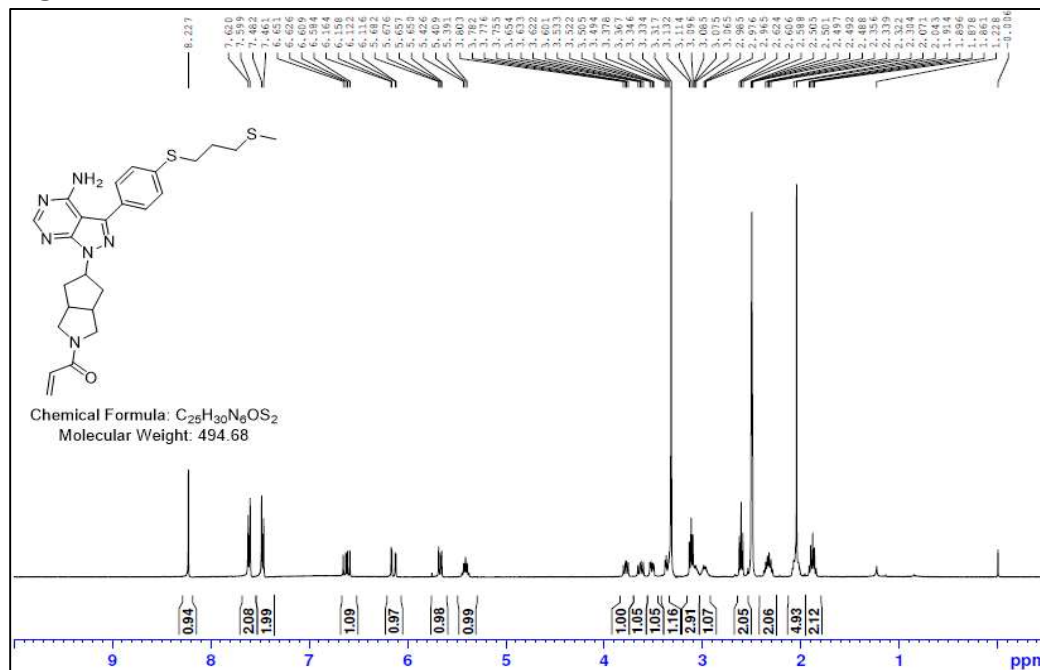
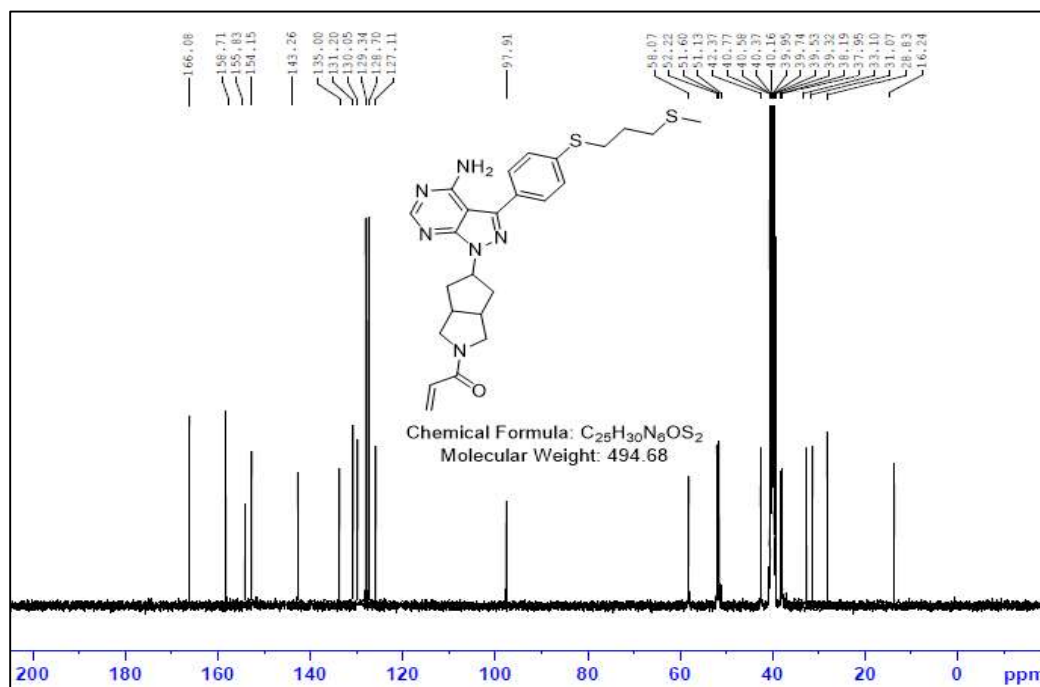
Figure 147. ^{13}C NMR of 32v

Figure 148. ESI-MS of 32v

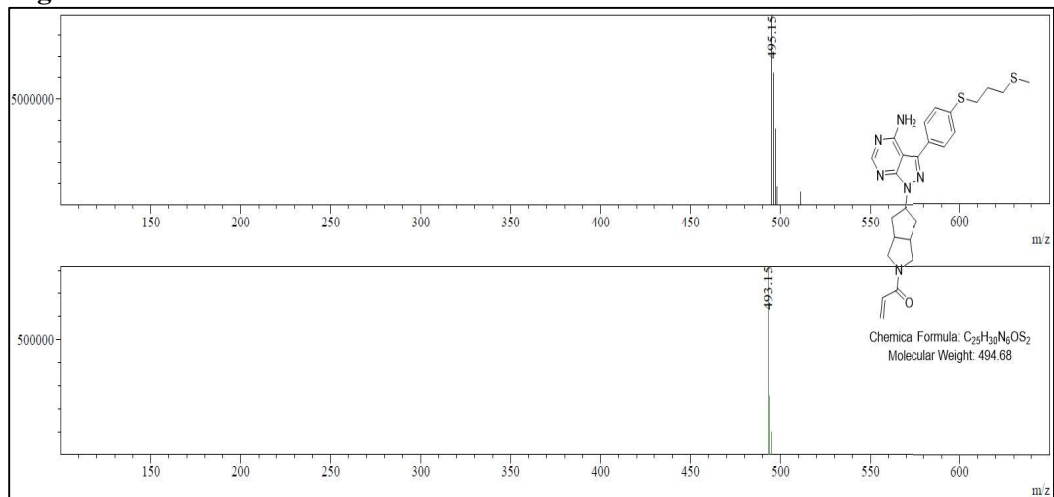


Figure 149. UPLC of 32v

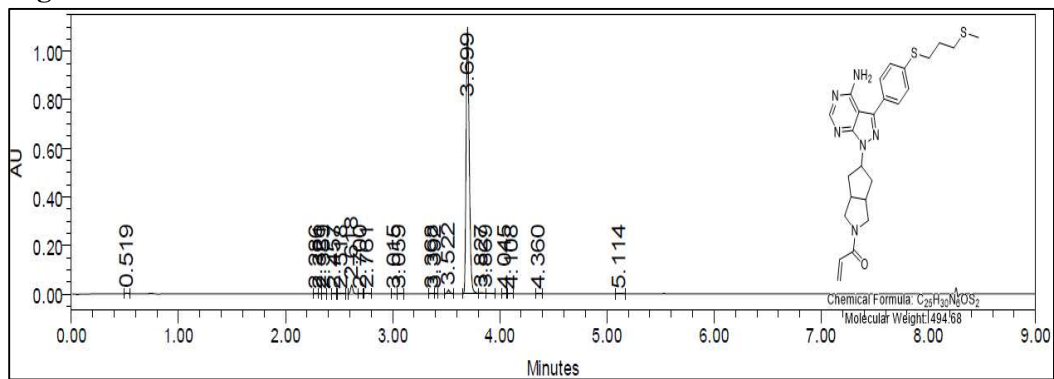
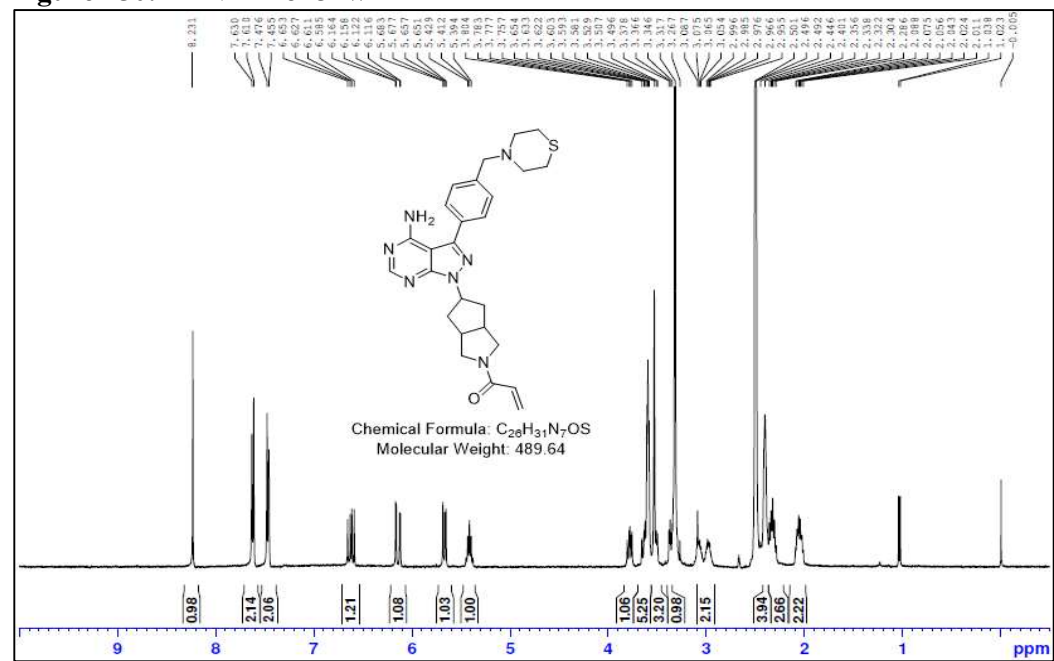
Figure 150. 1H NMR of 32w

Figure 151. ESI-MS of 32w

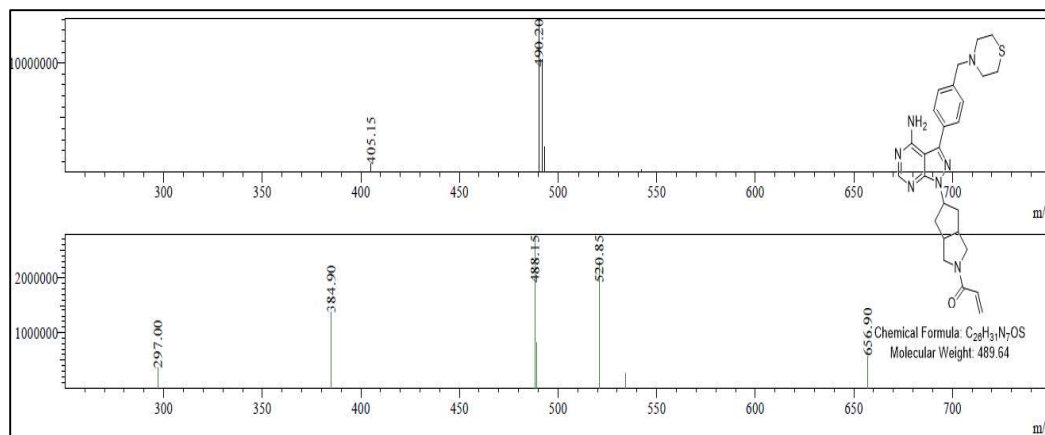


Figure 152. UPLC of 32w

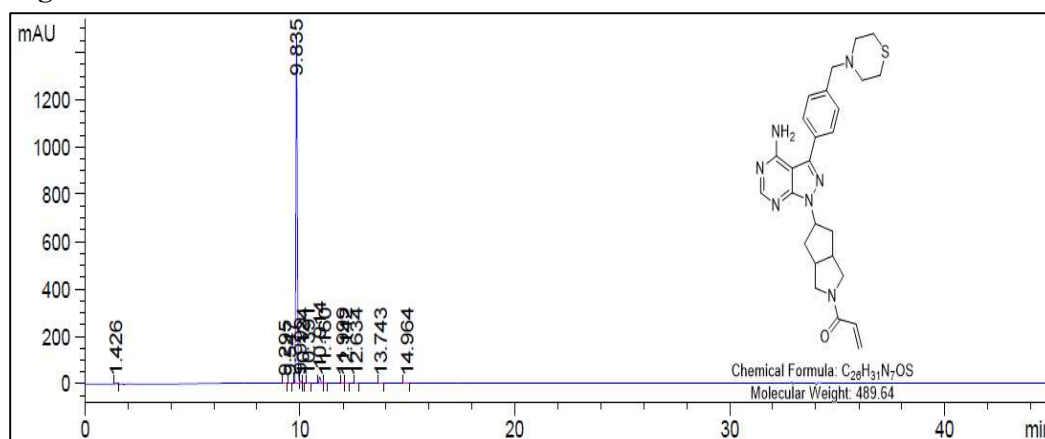


Figure 154. ESI-MS of 32x

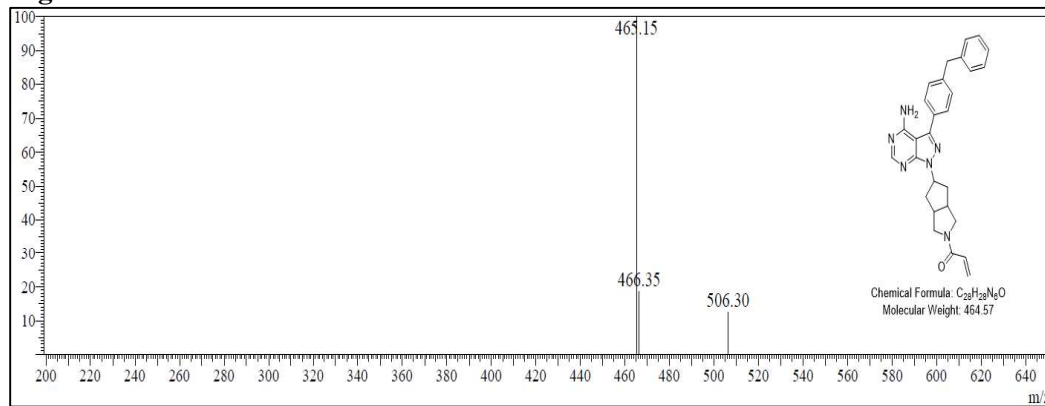


Figure 155. UPLC of 32x

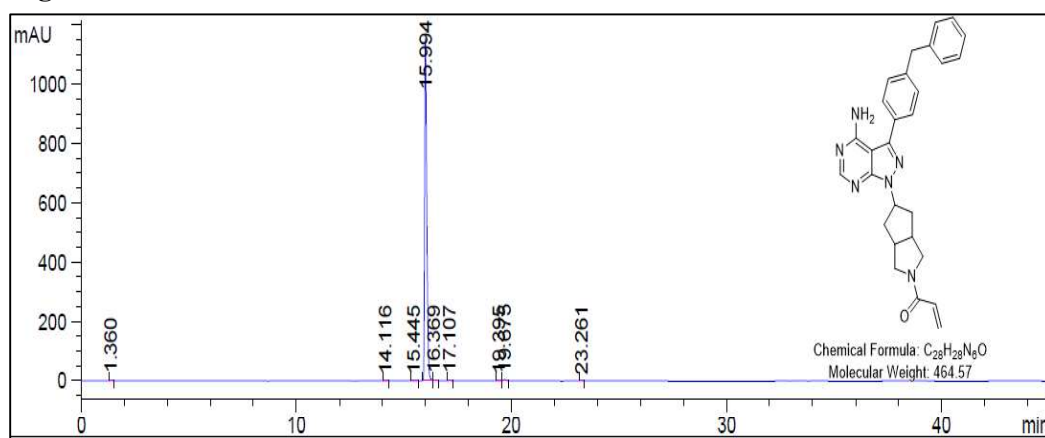
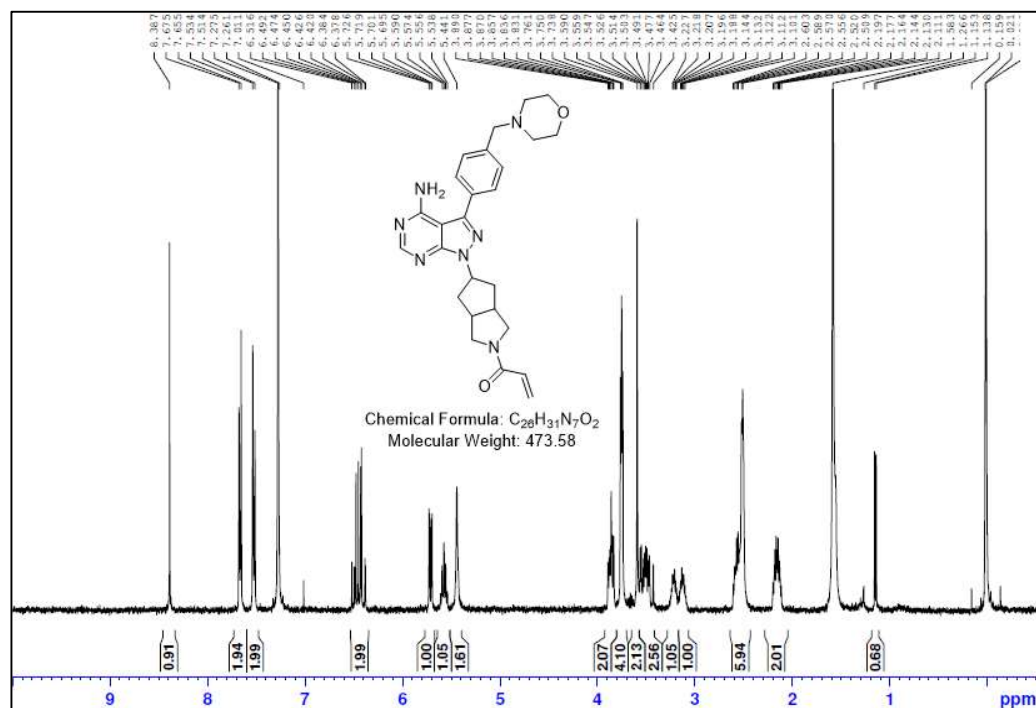
Figure 156. 1H NMR of 32y

Figure 157. ESI-MS of 32y

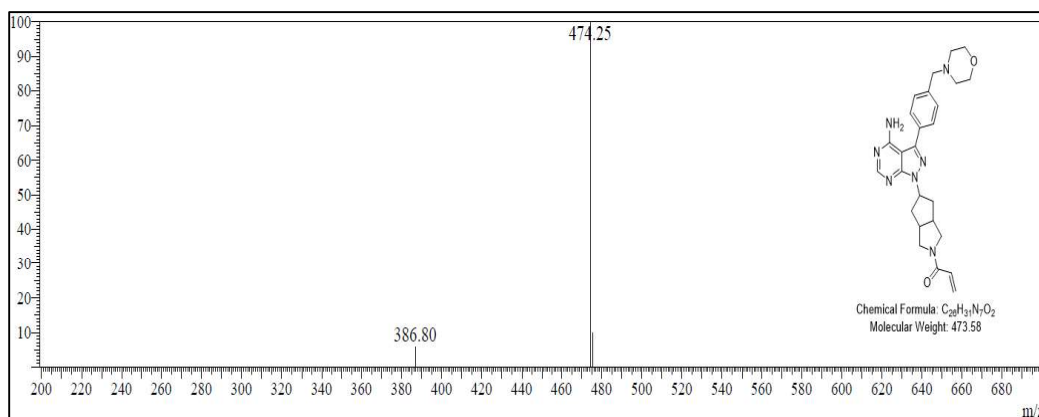


Figure 158. UPLC of 32y

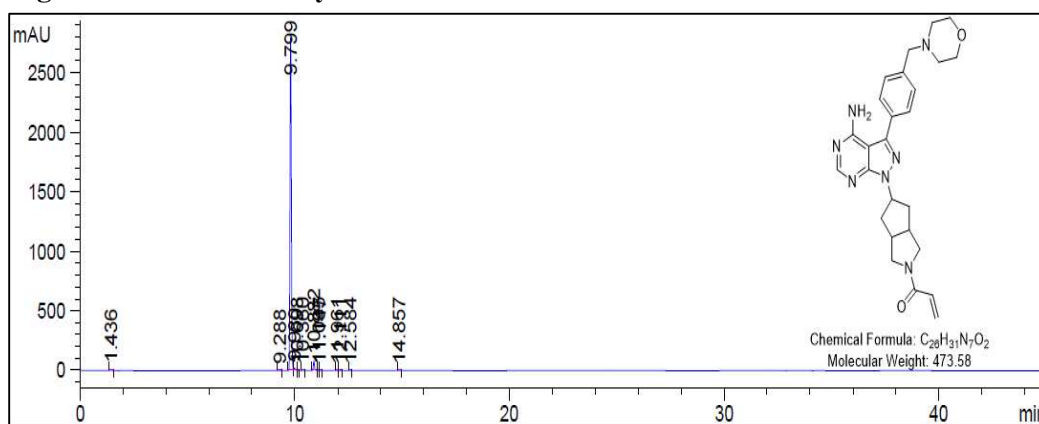
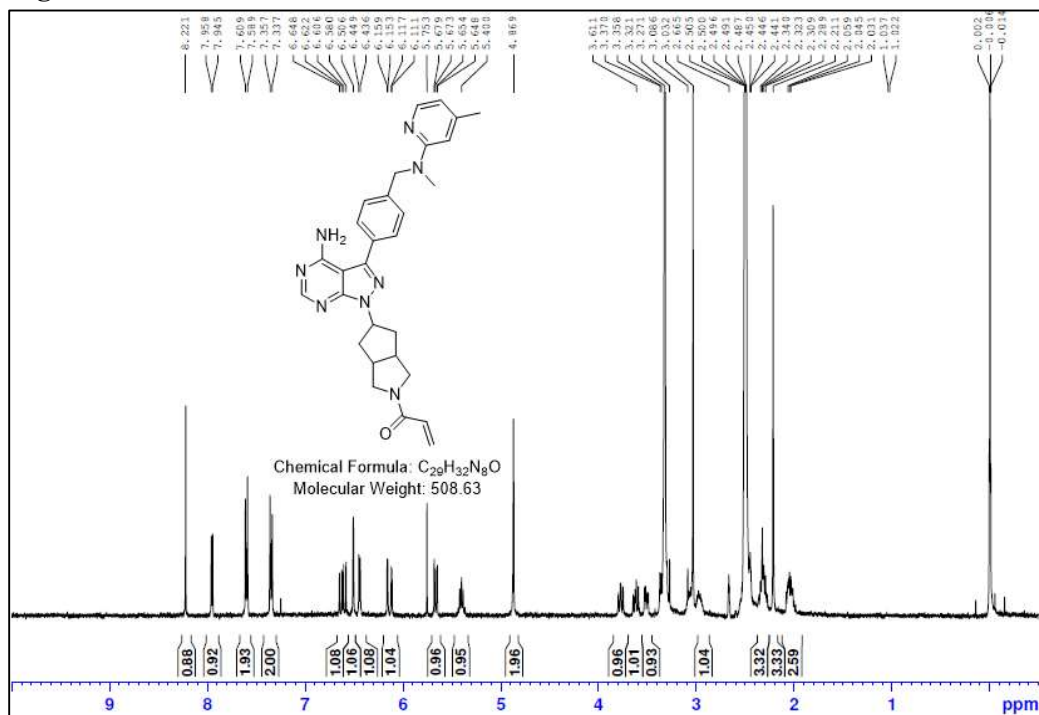
Figure 159. 1H NMR of 32z

Figure 160. ESI-MS of 32z

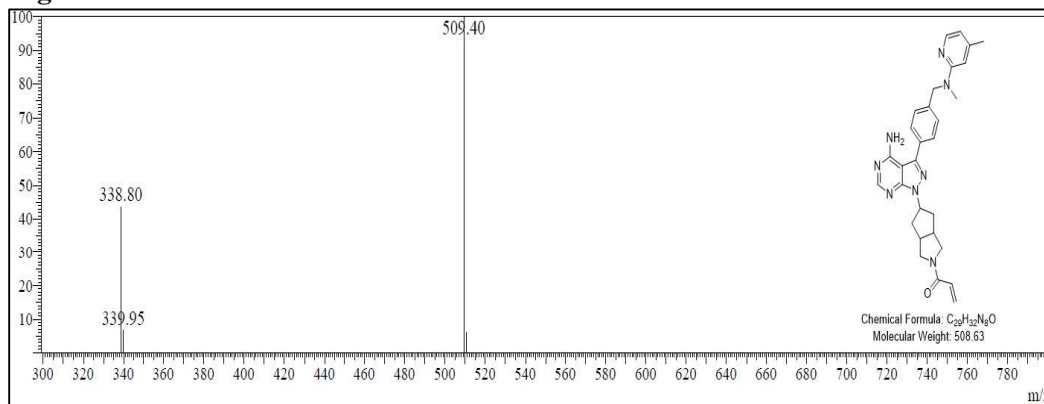


Figure 161. UPLC of 32z

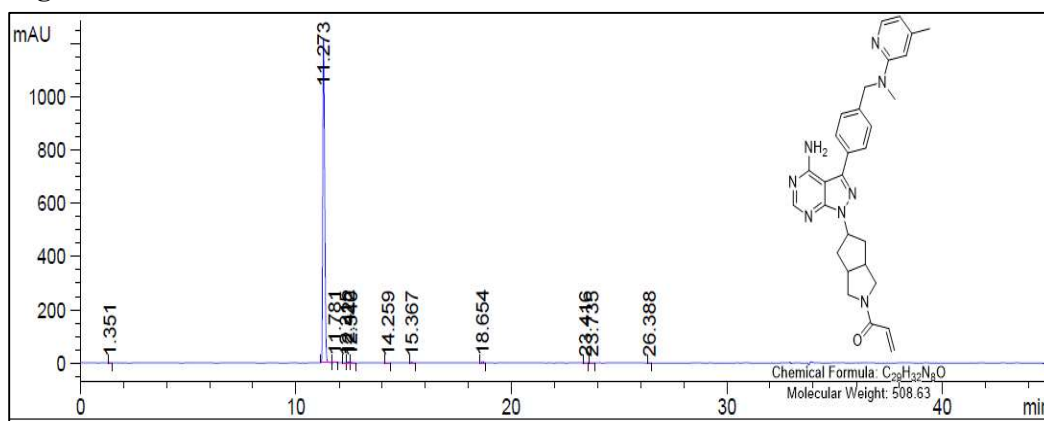
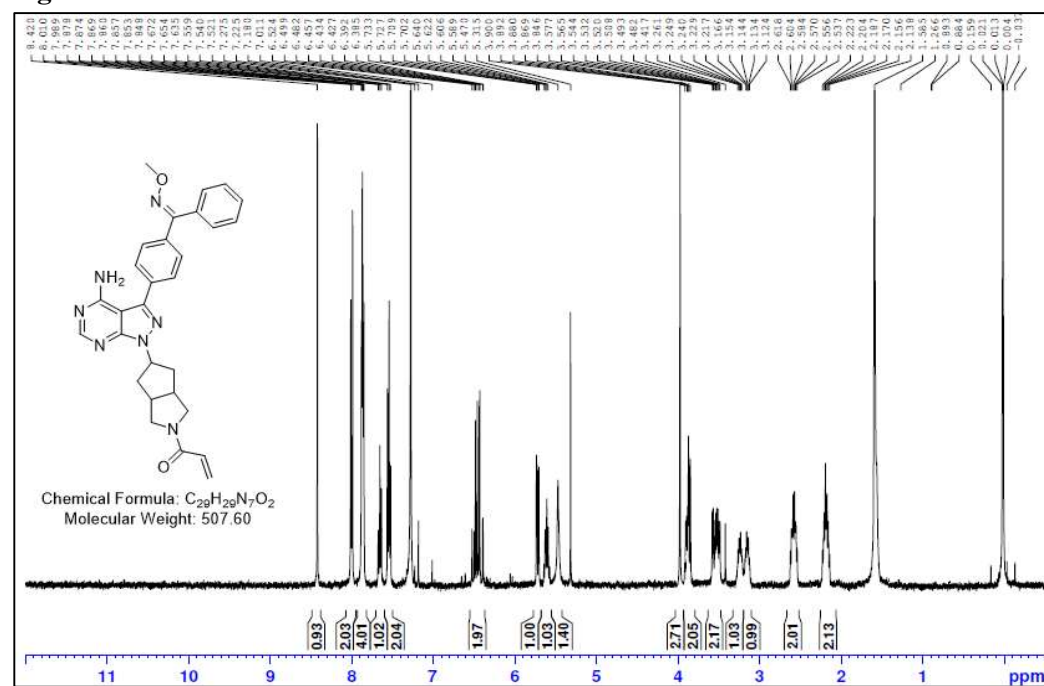
Figure 162. 1H NMR of 32aa

Figure 163. ESI-MS of 32aa

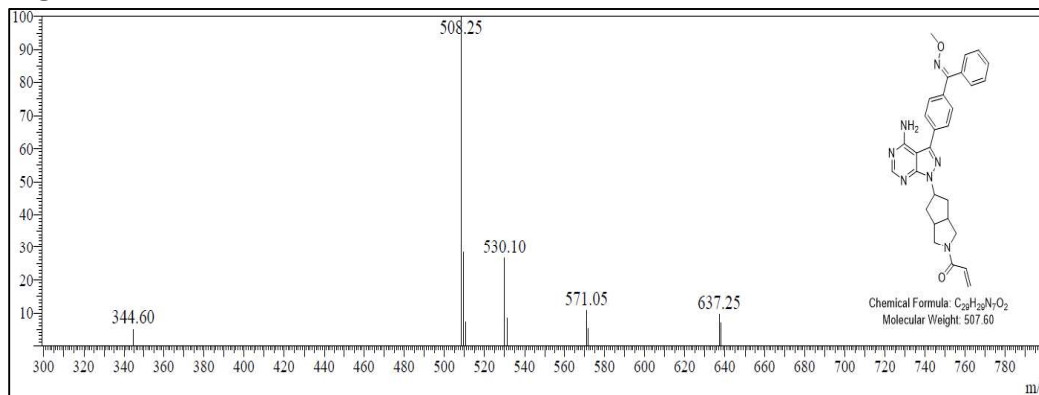


Figure 164. UPLC of 32aa

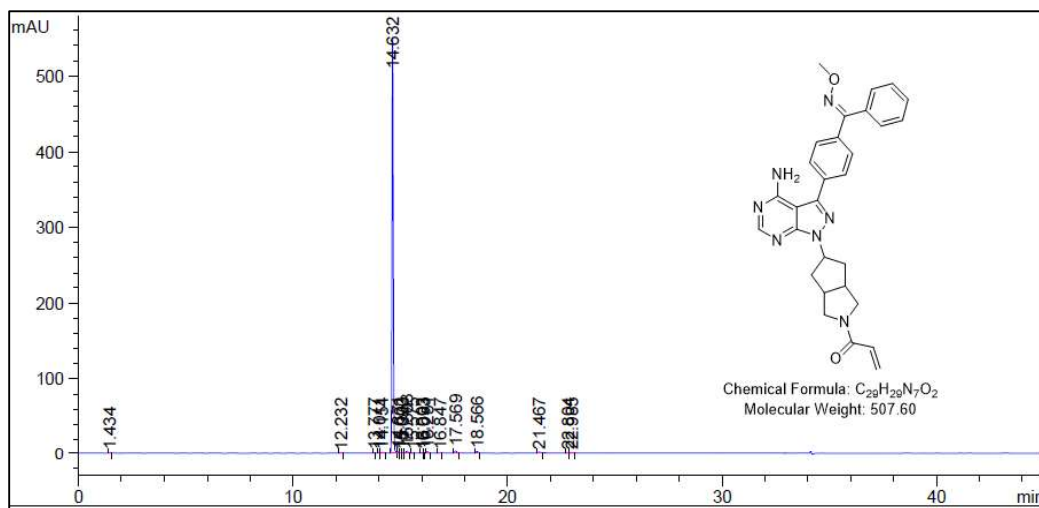
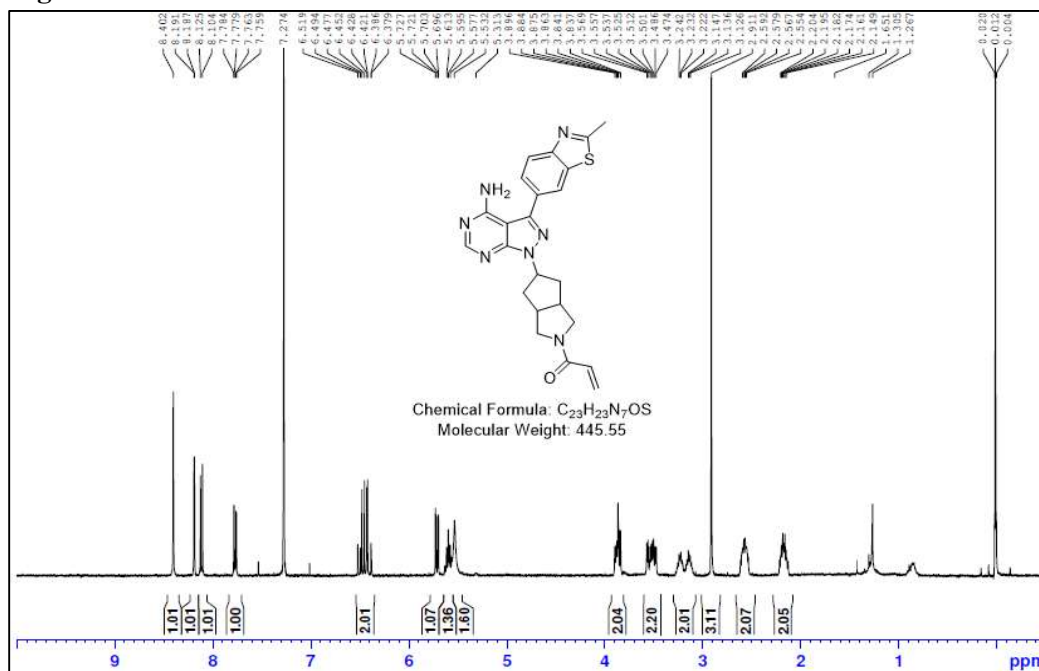
Figure 165. 1H NMR of 32ab

Figure 166. ESI-MS of 32ab

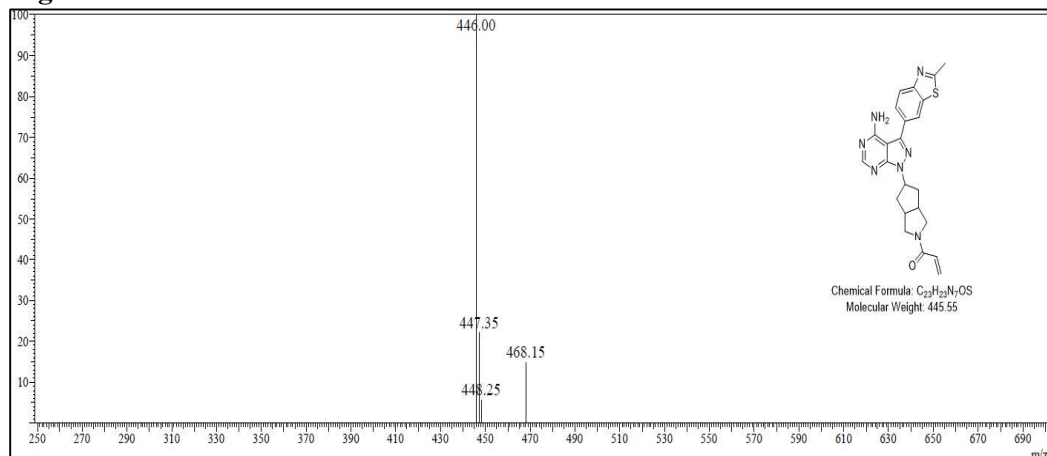


Figure 167. UPLC of 32ab

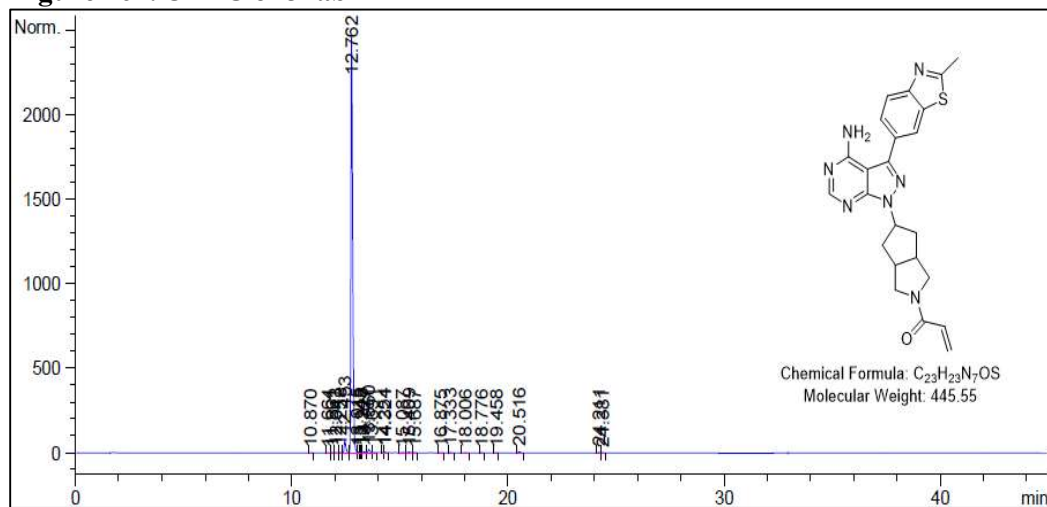
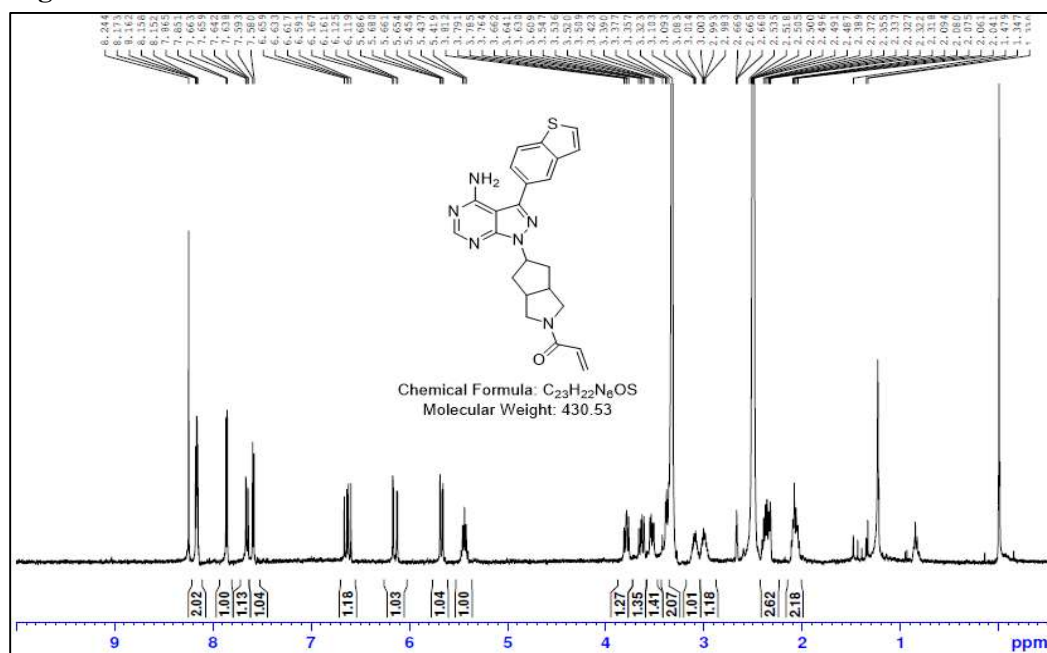
Figure 168. 1H NMR of 32ac

Figure 169. ESI-MS of 32ac

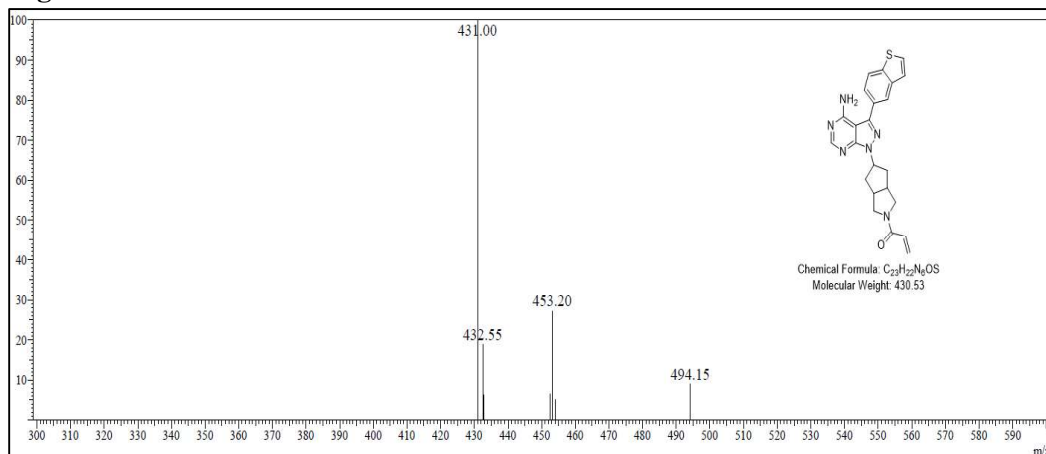


Figure 170. UPLC of 32ac

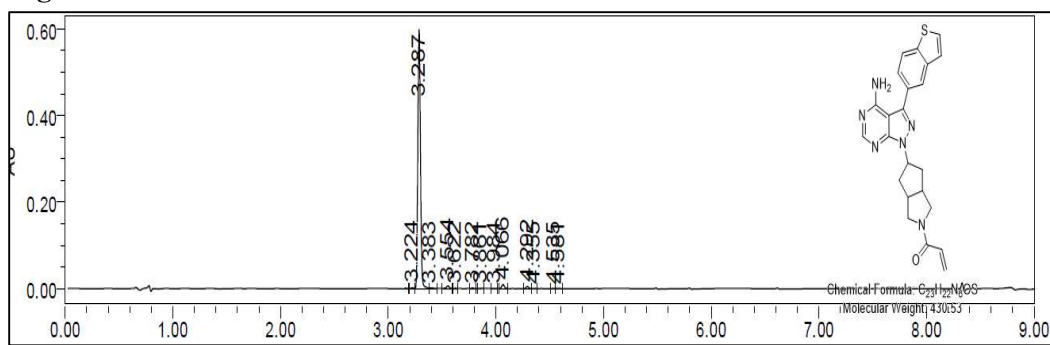
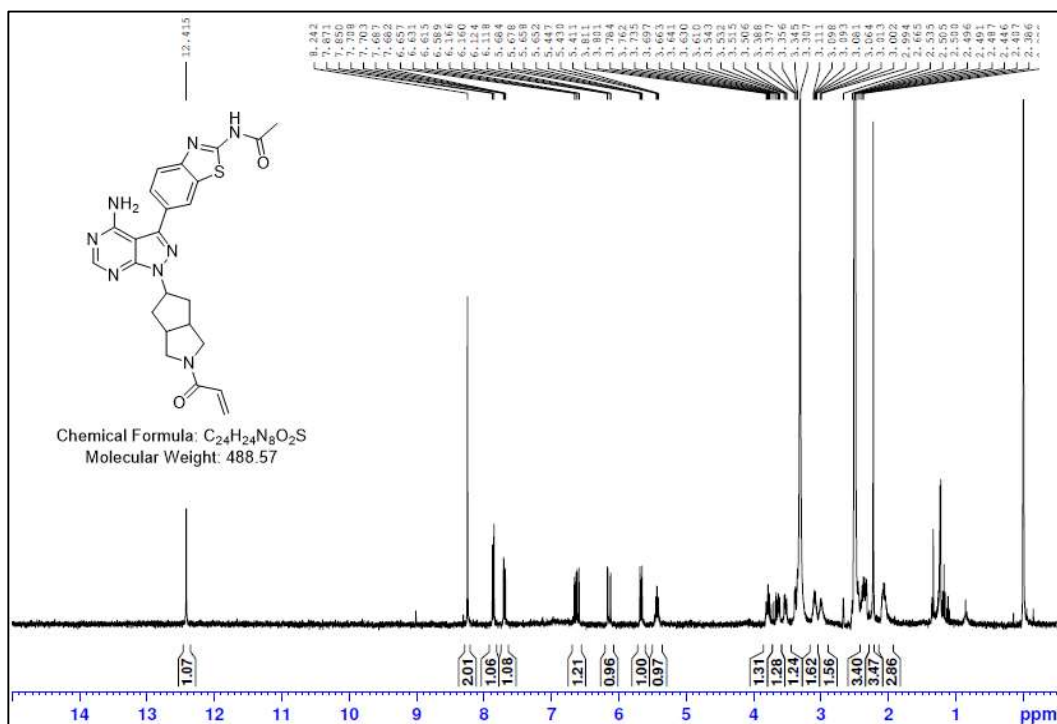
Figure 171. 1H NMR of 32ad

Figure 172. ESI-MS of 32ad

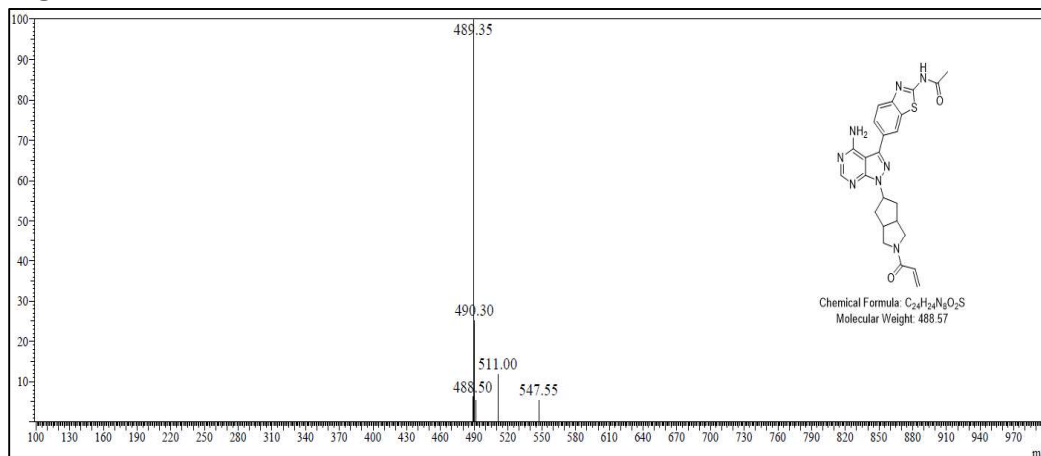


Figure 173. UPLC of 32ad

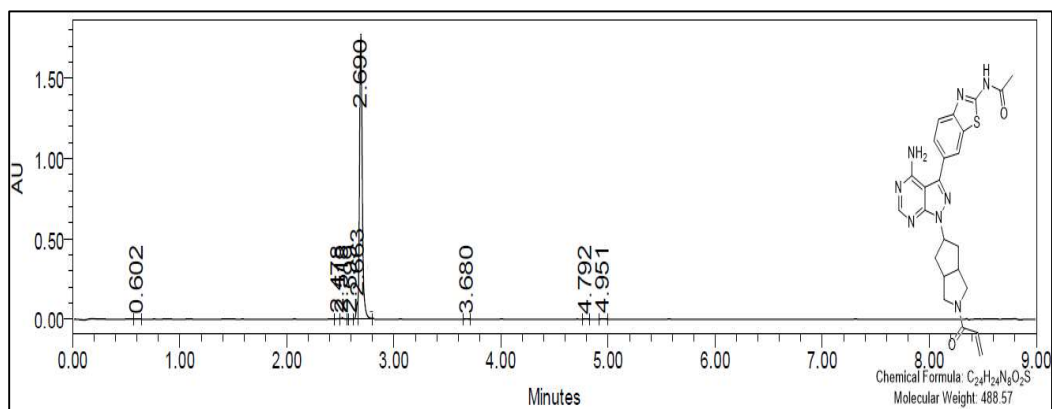
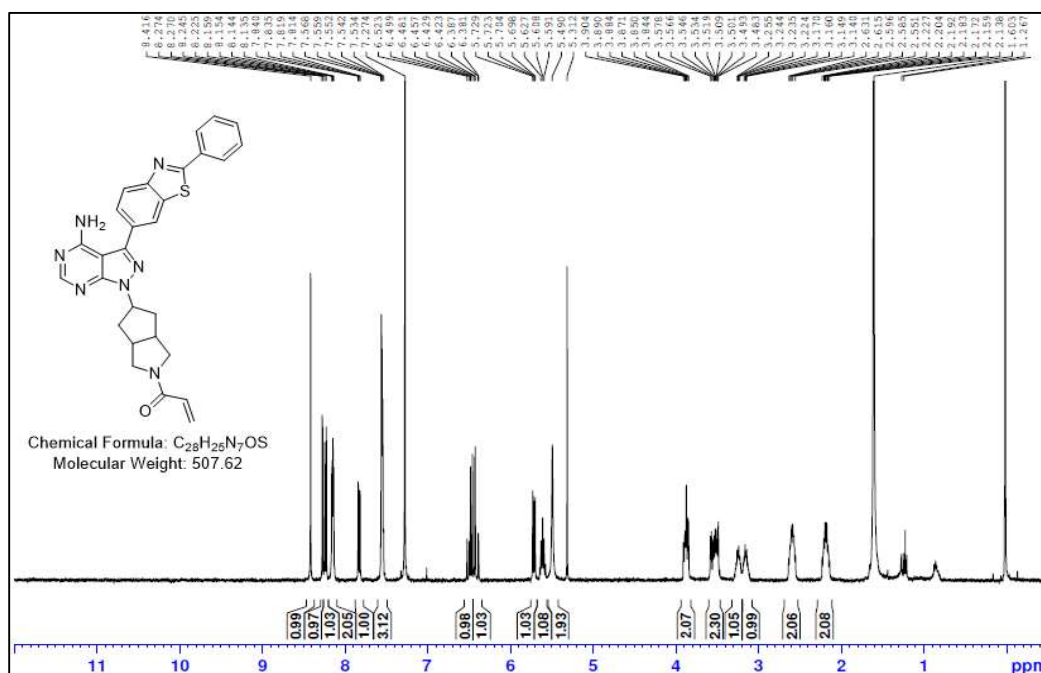
Figure 174. 1H NMR of 32ae

Figure 175. ESI-MS of 32ae

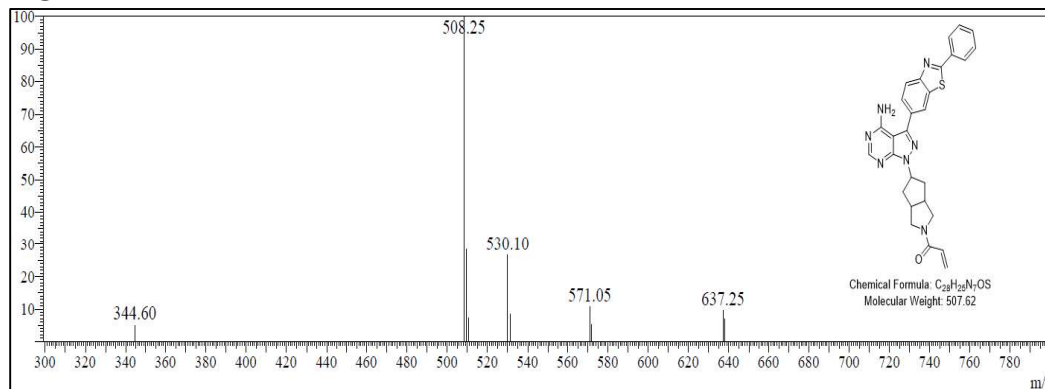


Figure 176. UPLC of 32ae

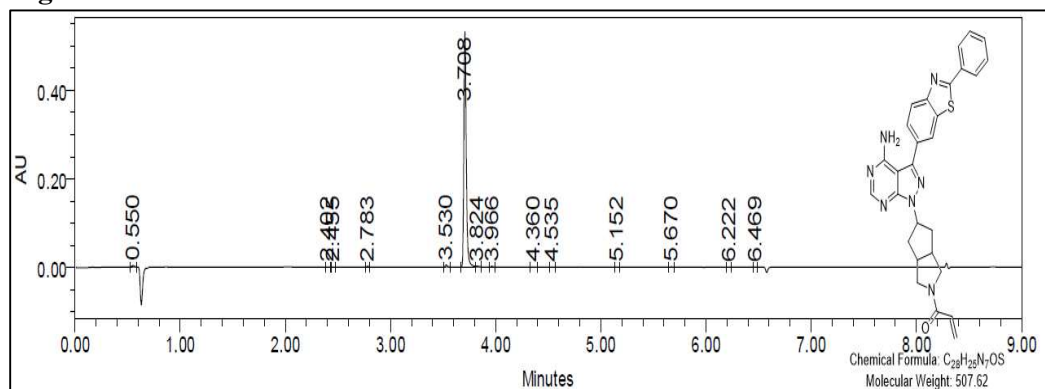
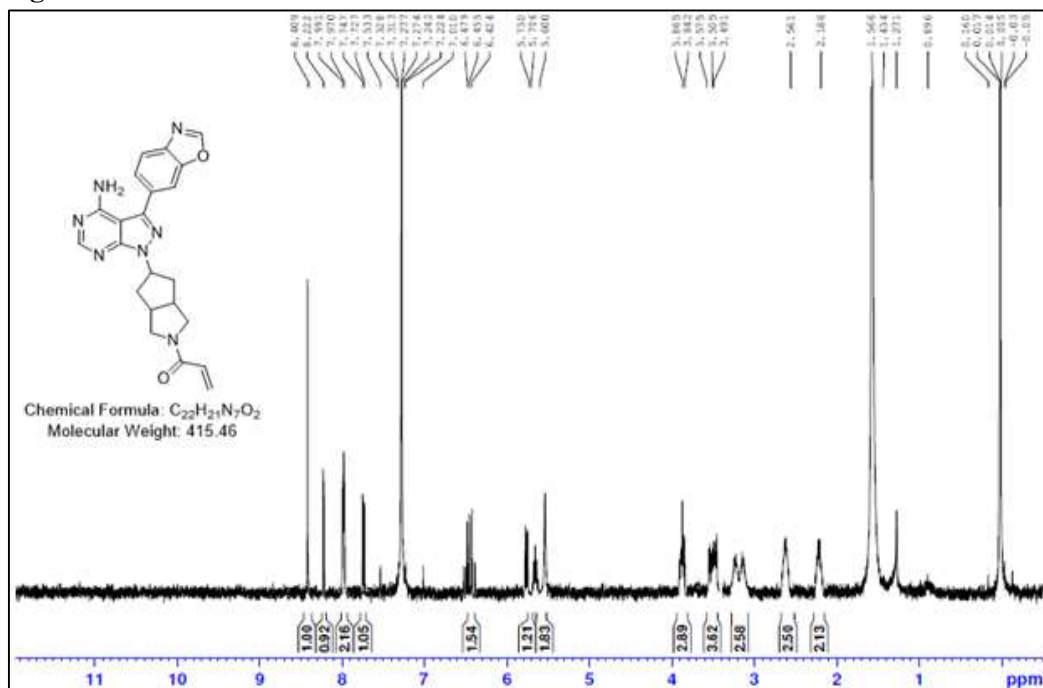
Figure 177. 1H NMR of 32af

Figure 178. ESI-MS of 32af

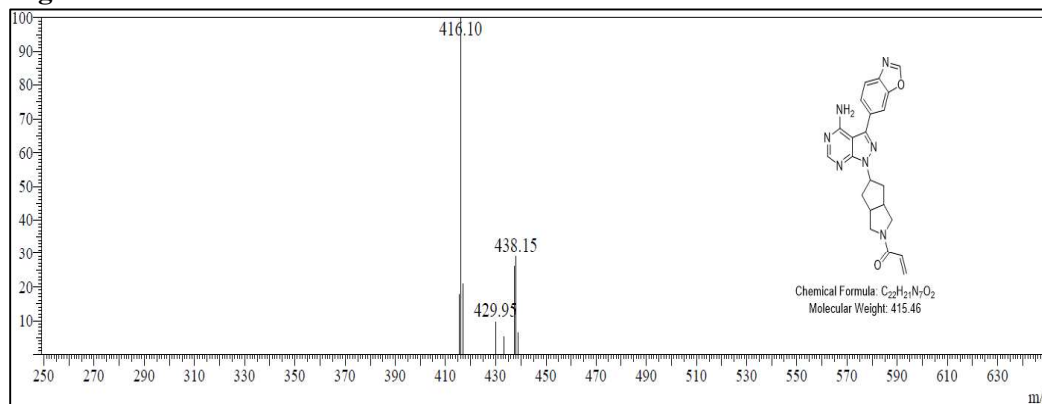


Figure 179. UPLC of 32af

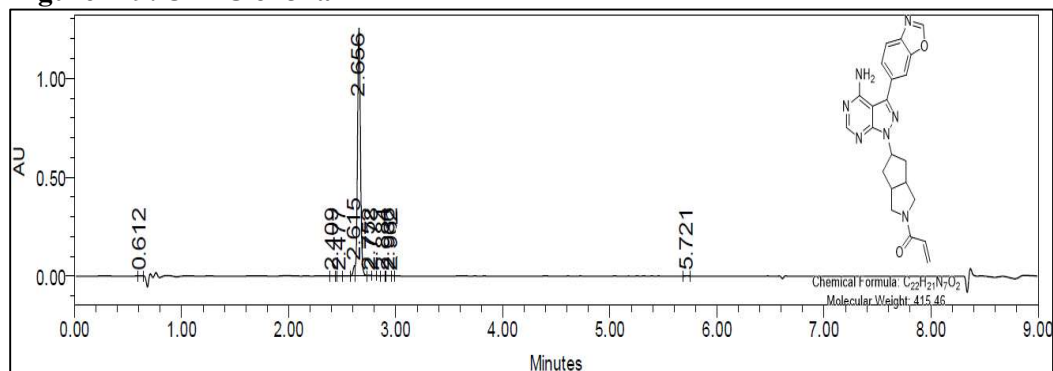
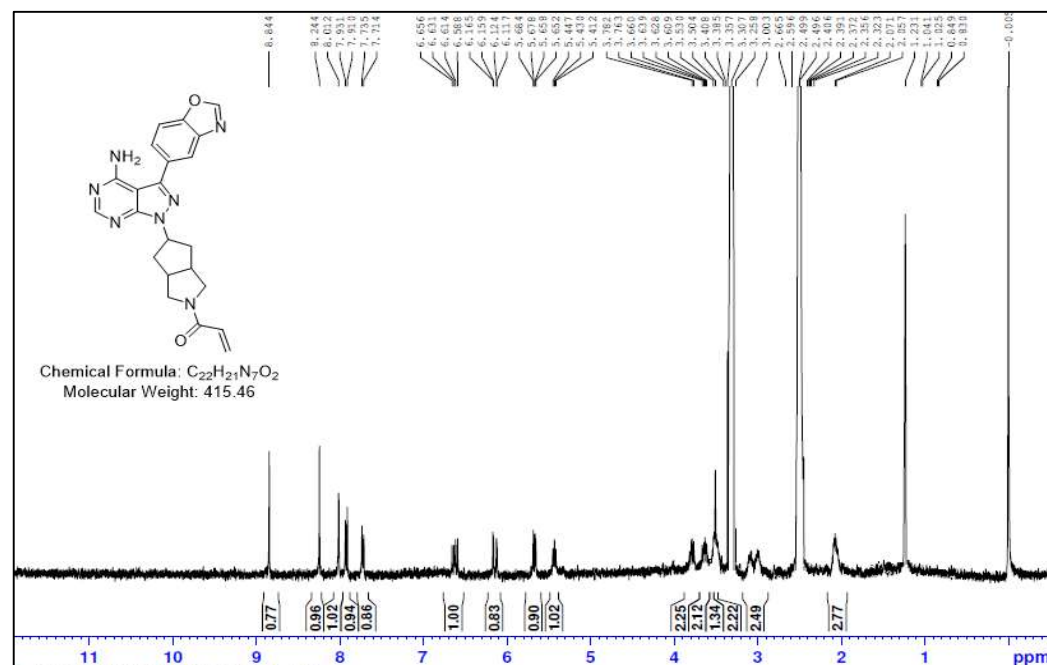
Figure 180. 1H NMR of 32ag

Figure 181. ESI-MS of 32ag

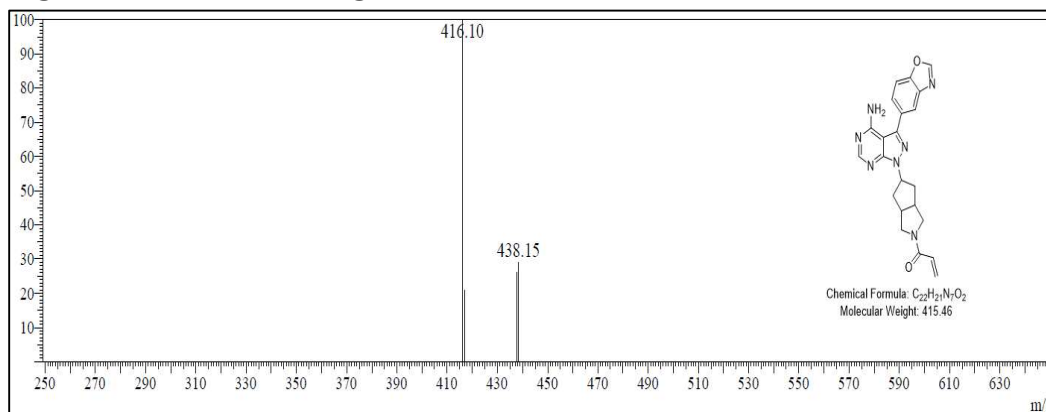


Figure 182. UPLC of 32ag

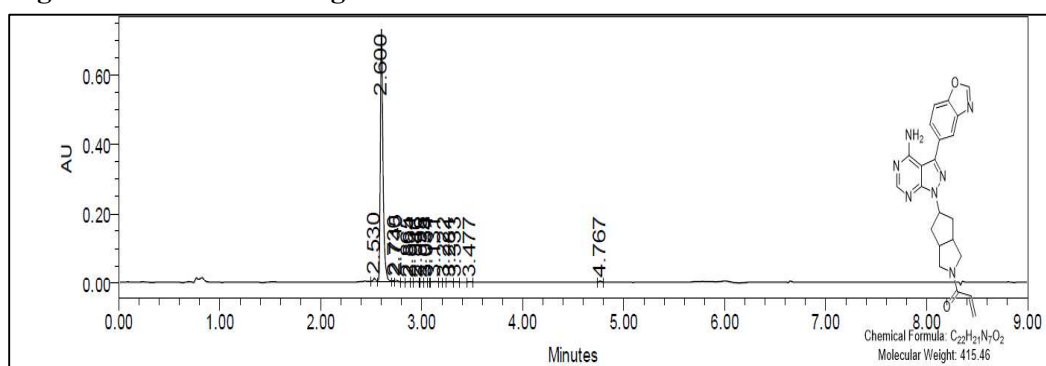
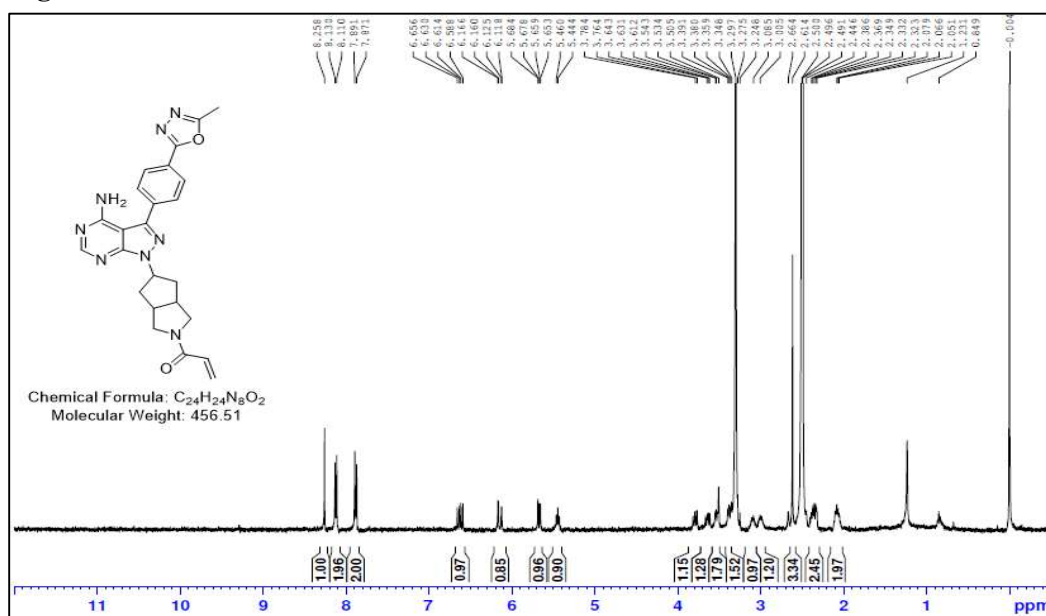
Figure 183. 1H NMR of 32ah

Figure 184. ESI-MS of 32ah

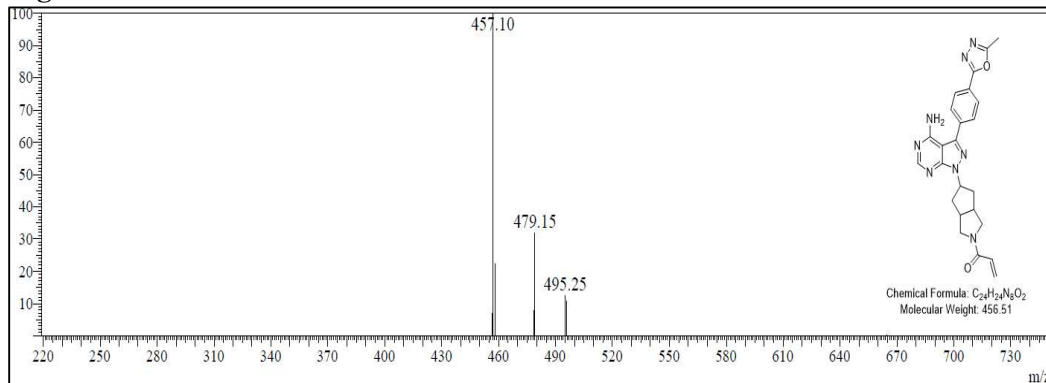


Figure 185. UPLC of 32ah

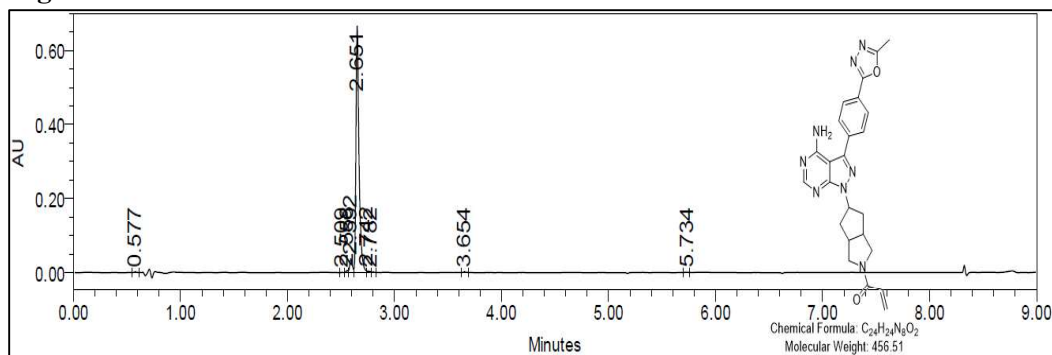
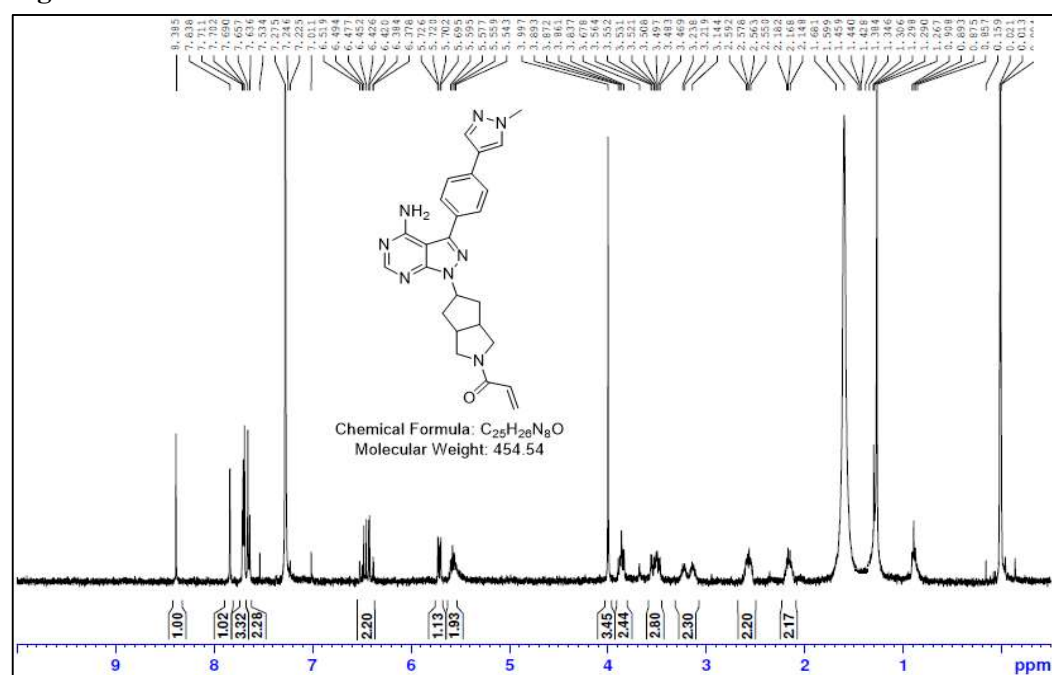
Figure 186. 1H NMR of 32ai

Figure 187. ESI-MS of 32ai

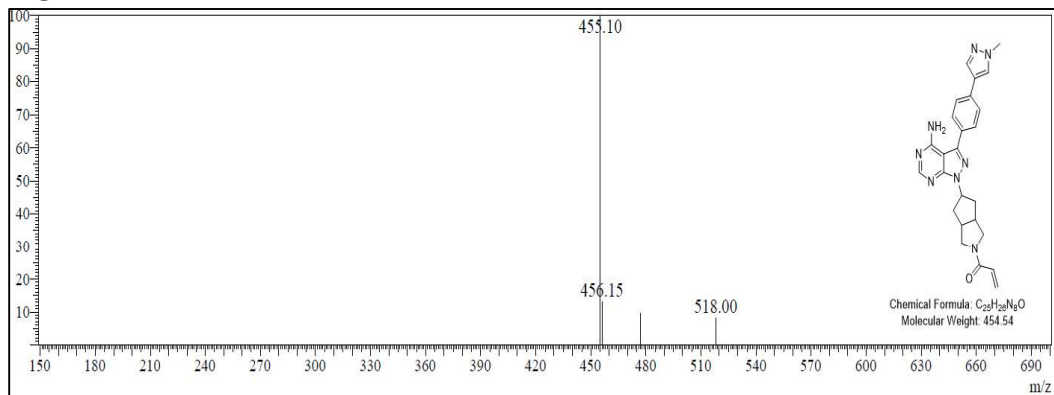


Figure 188. UPLC of 32ai

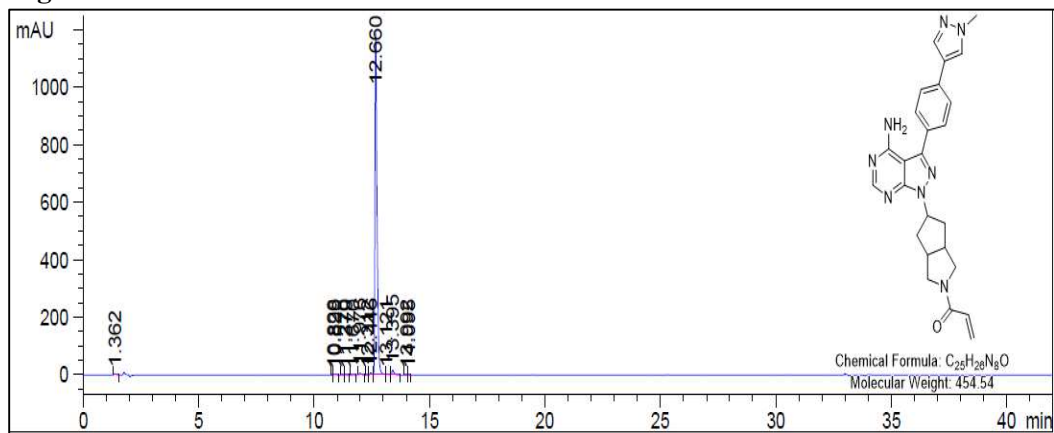
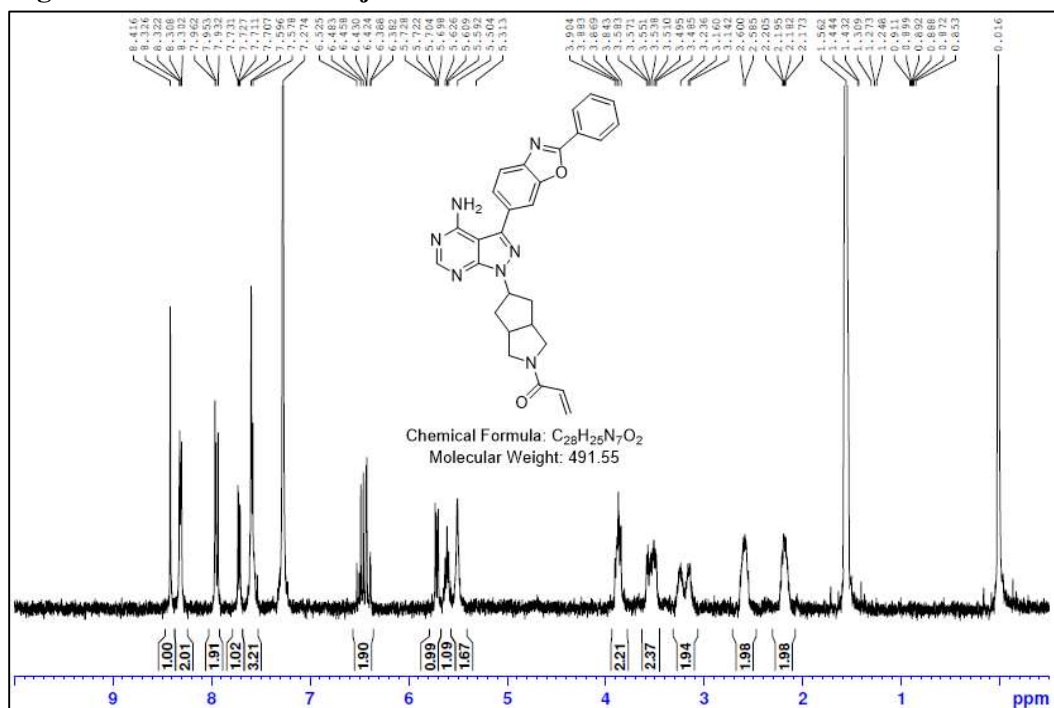
Figure 189. 1H NMR of 32aj

Figure 190. ESI-MS of 32aj

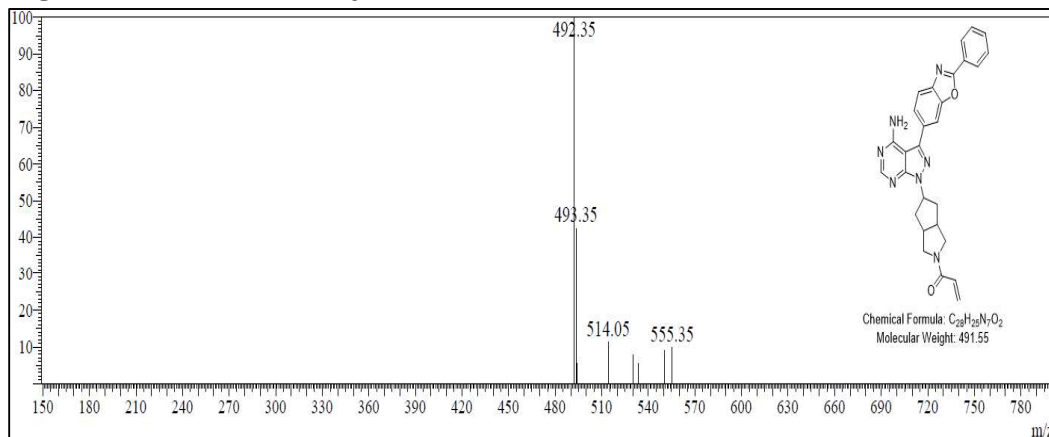


Figure 191. UPLC of 32aj

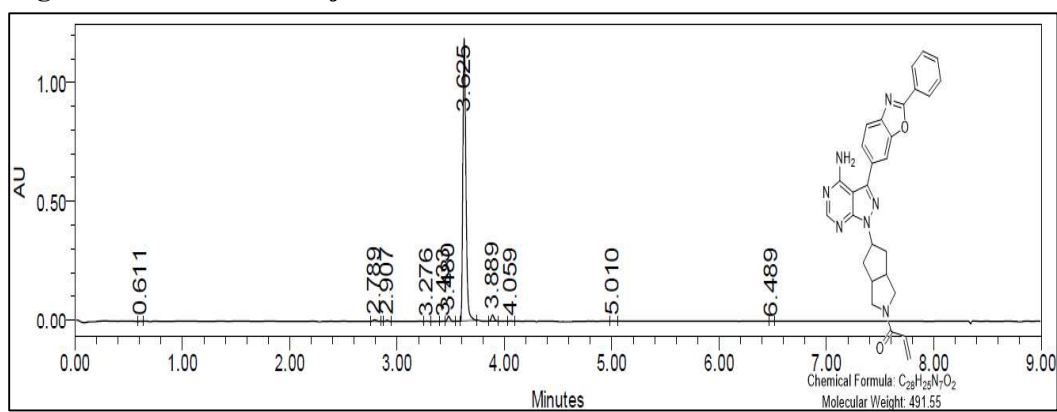
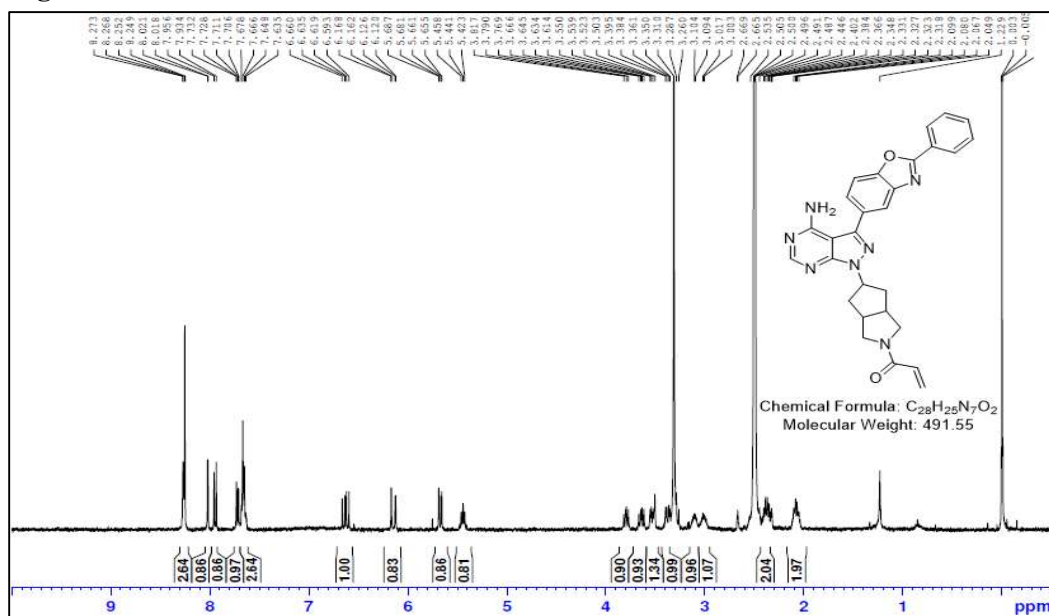
Figure 192. 1H NMR of 32ak

Figure 193. ESI-MS of 32ak

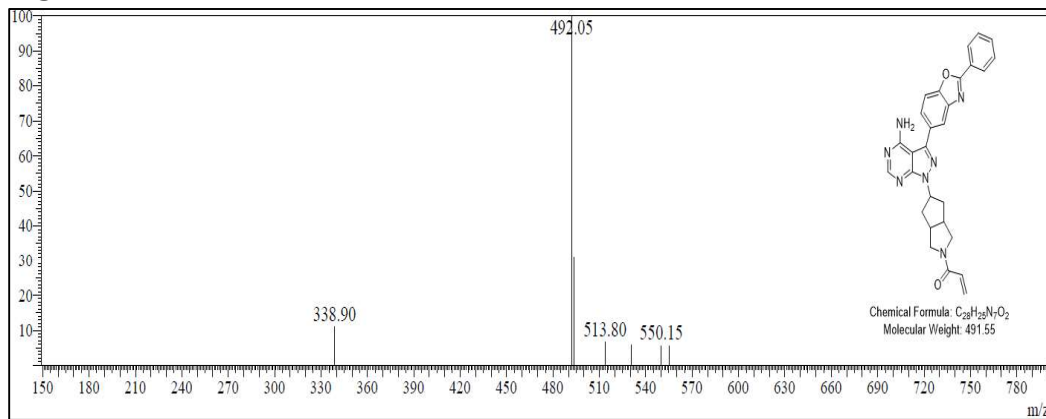


Figure 194. UPLC of 32ak

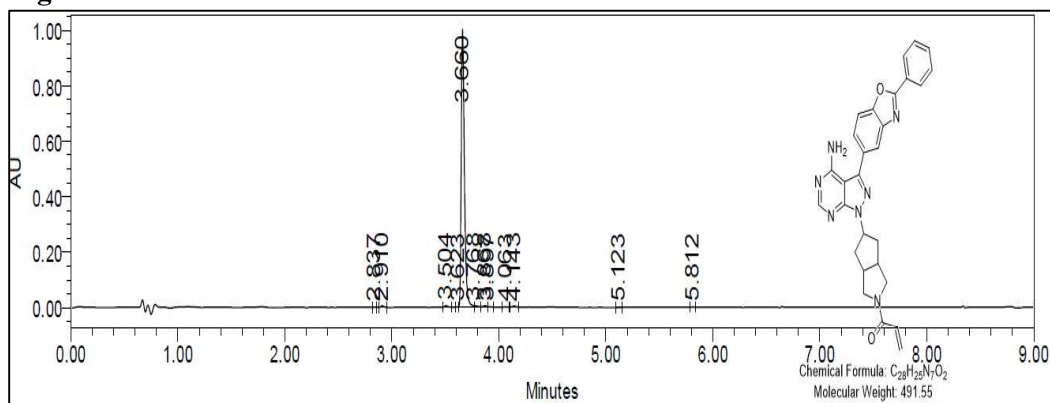
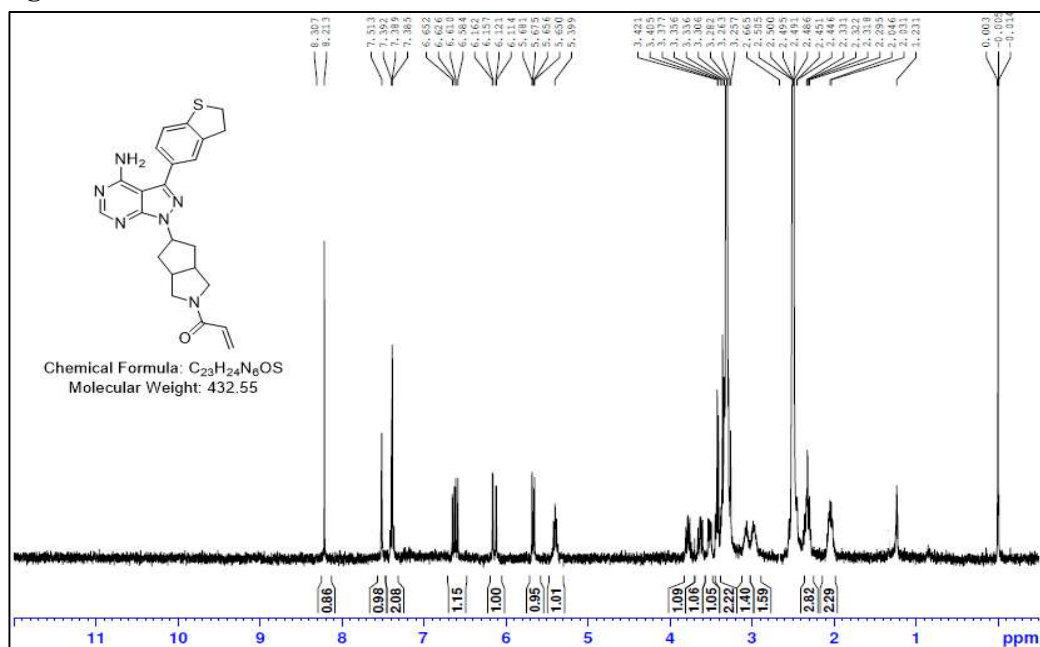
Figure 195. 1H NMR of 32al

Figure 196. ESI-MS of 32al

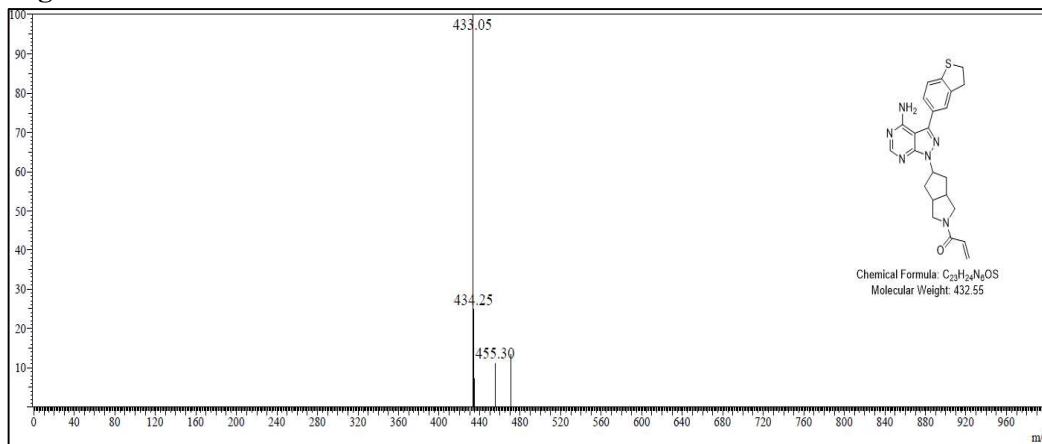


Figure 197. UPLC of 32al

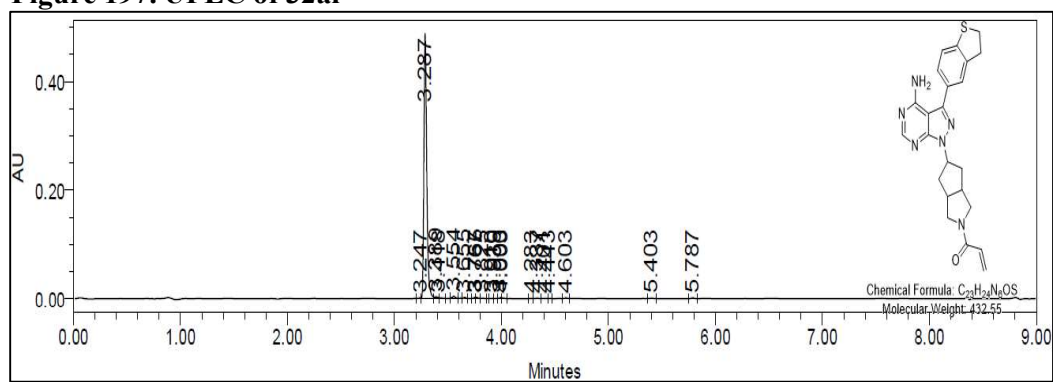
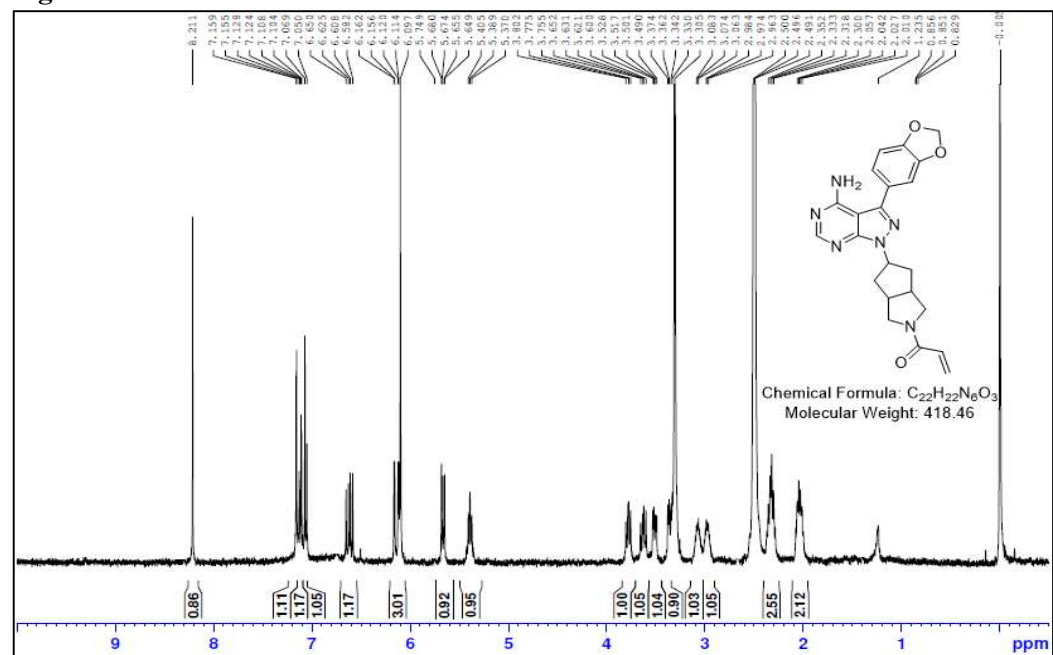
Figure 198. 1H NMR of 32am

Figure 199. ESI-MS of 32am

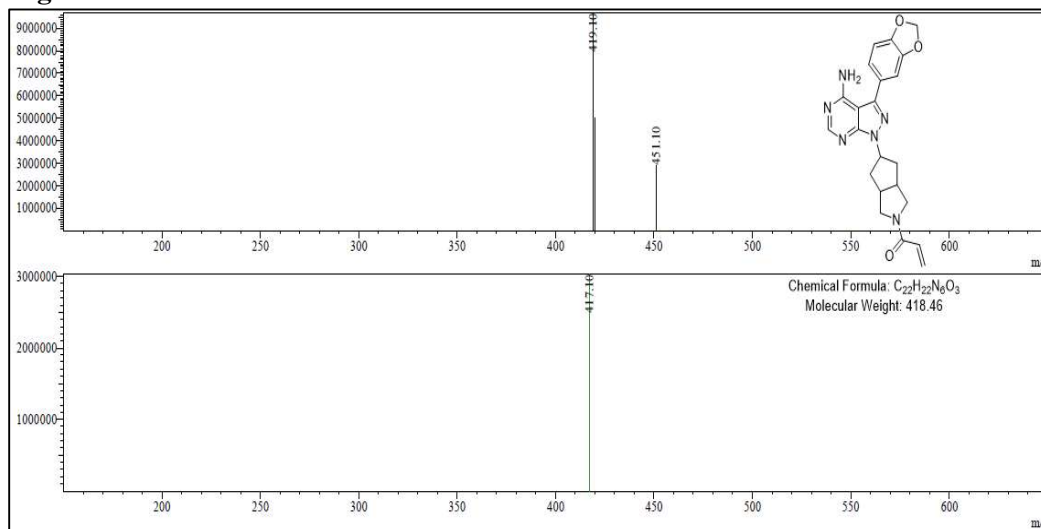


Figure 200. UPLC of 32am

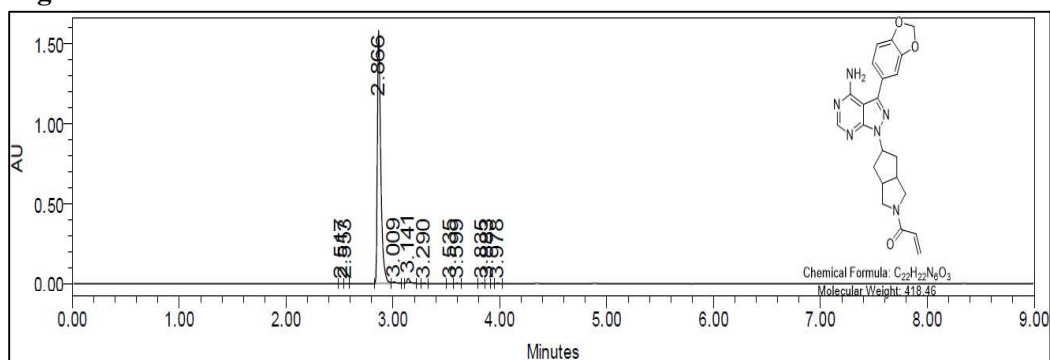
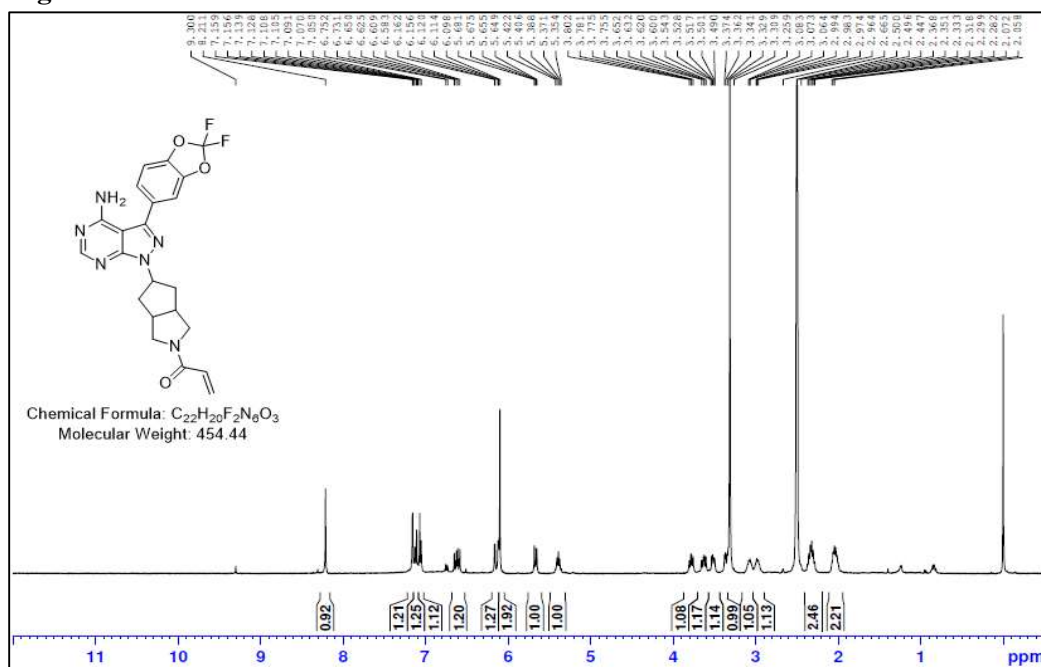
Figure 201. 1H NMR of 32an

Figure 202. ESI-MS of 32an

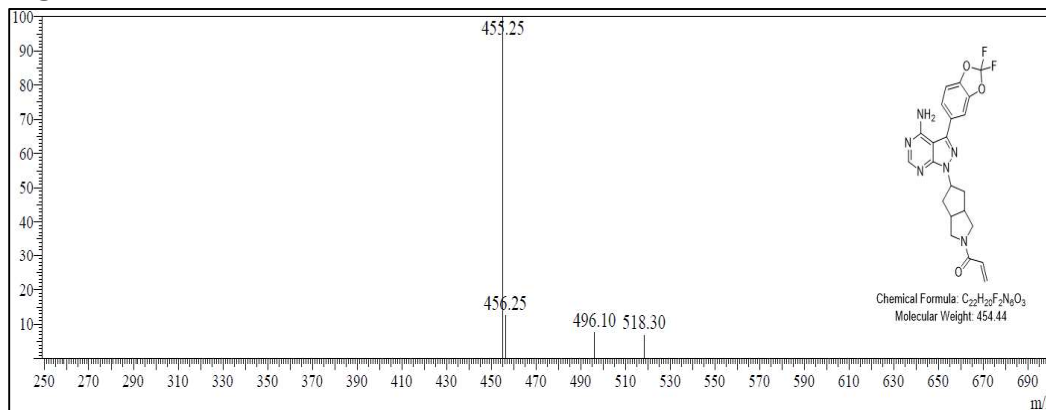


Figure 203. UPLC of 32an

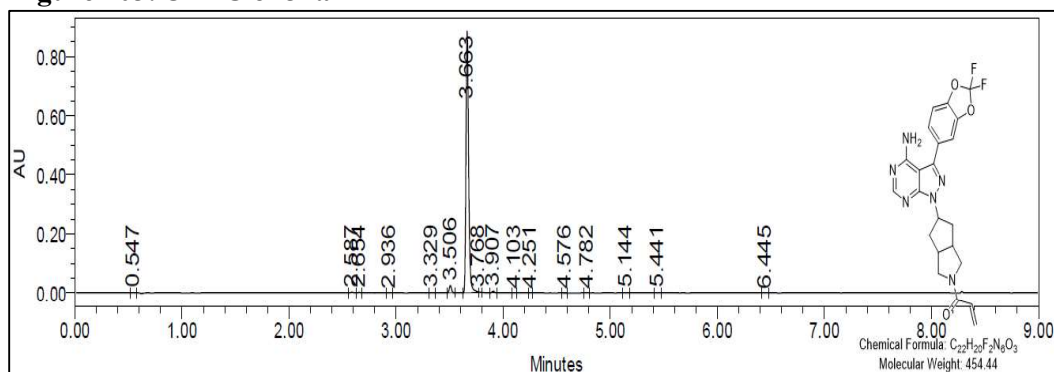
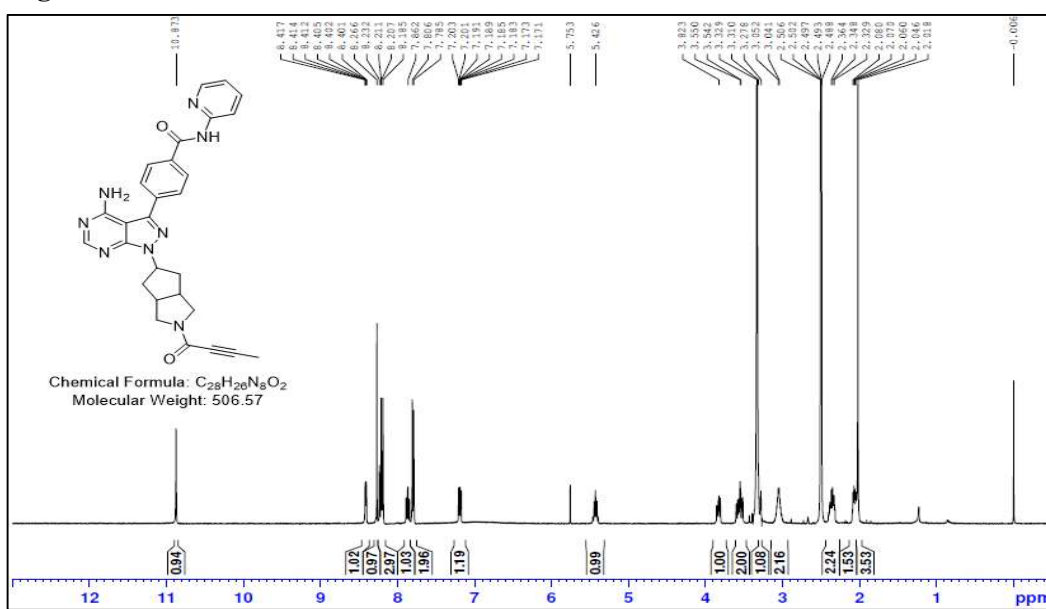
Figure 204. 1H NMR of 32ao

Figure 205. ^{13}C NMR of 32ao

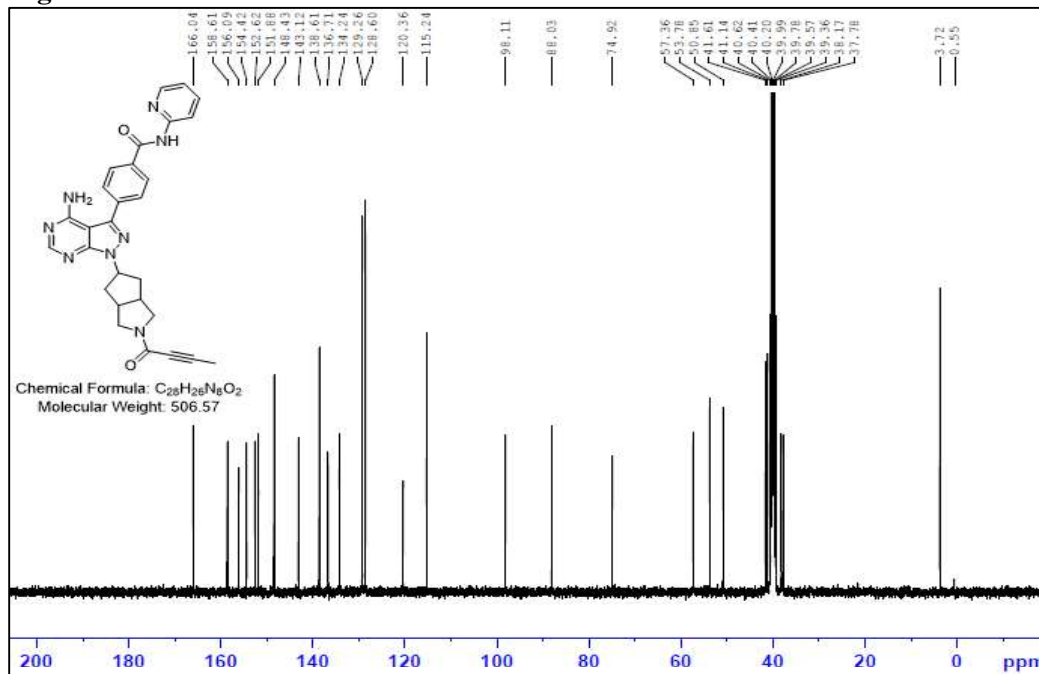


Figure 206. ESI-MS of 32ao

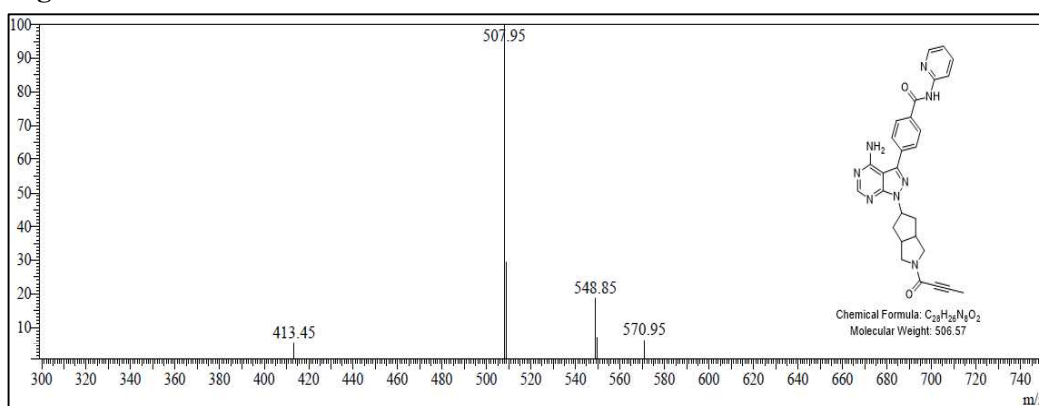


Figure 207. UPLC of 32ao

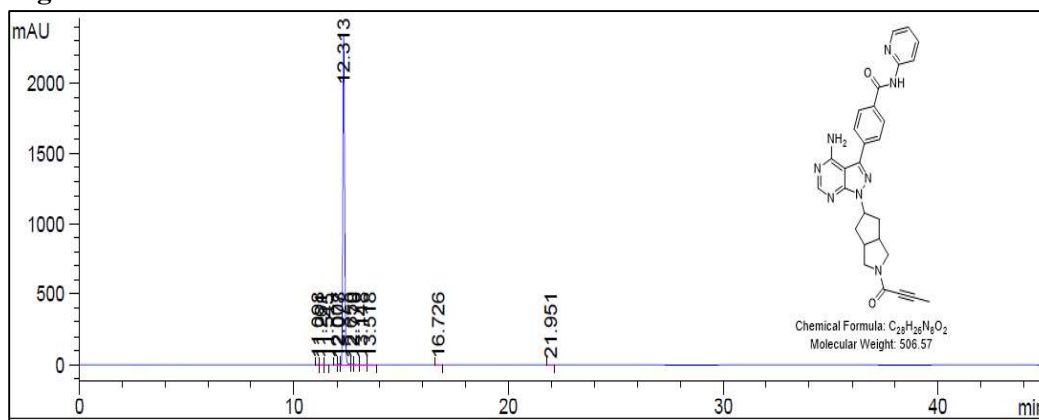


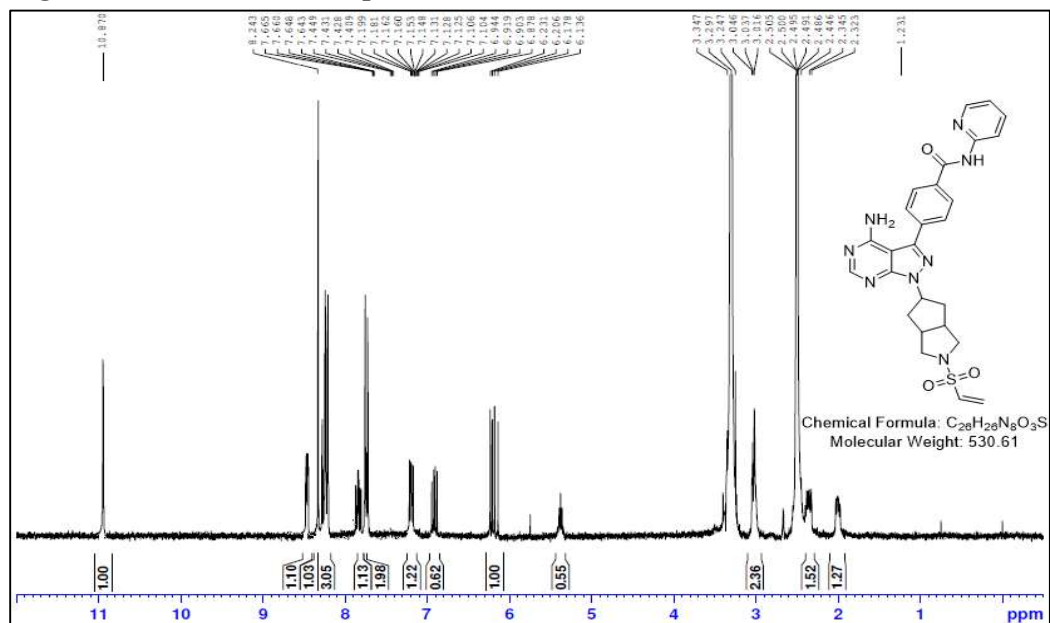
Figure 208. ^1H NMR of 32ap

Figure 209. ESI-MS of 32ap

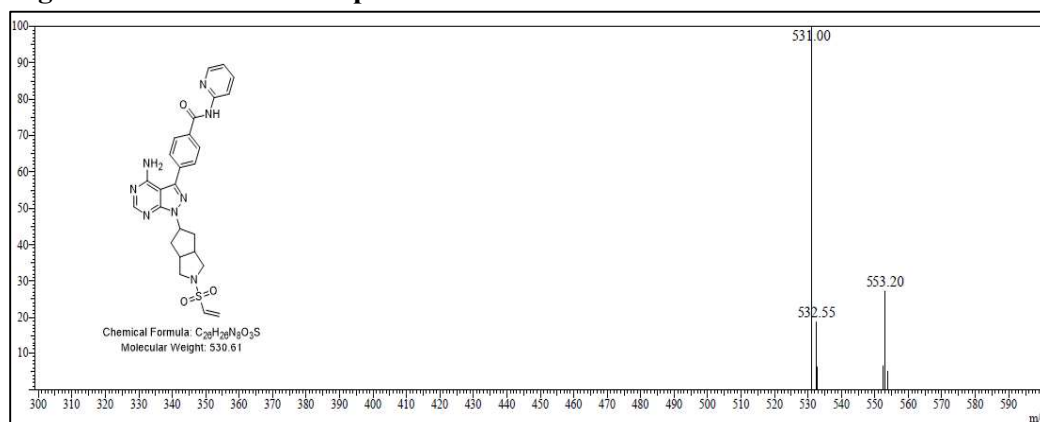


Figure 210. UPLC of 32ap

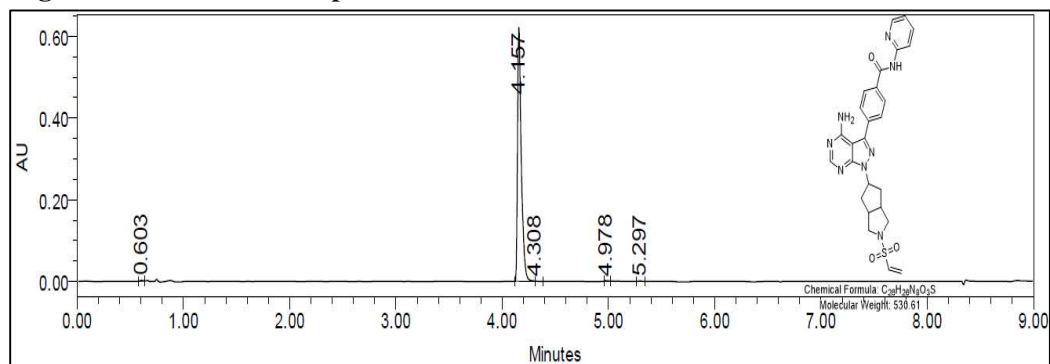


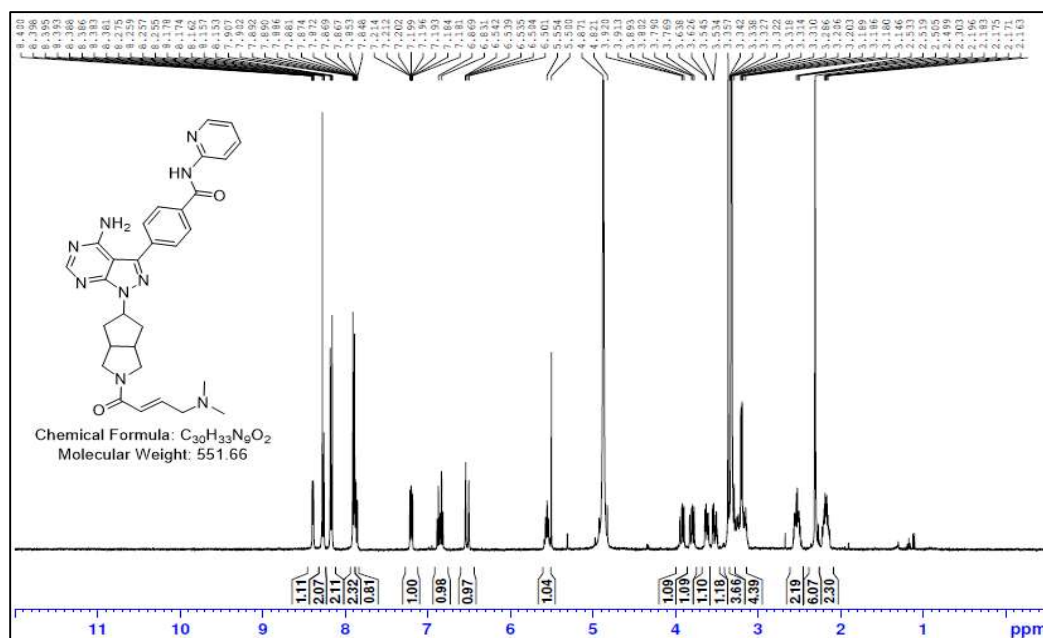
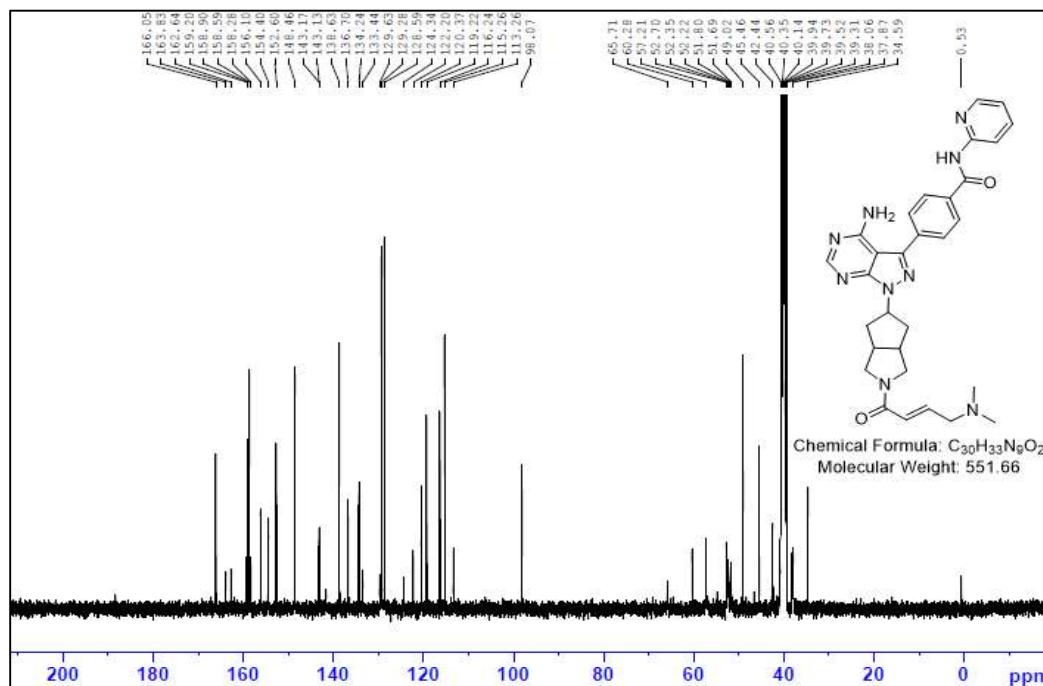
Figure 211. ^1H NMR of 32aqFigure 212. ^{13}C NMR of 32aq

Figure 213. ESI-MS of 32aq

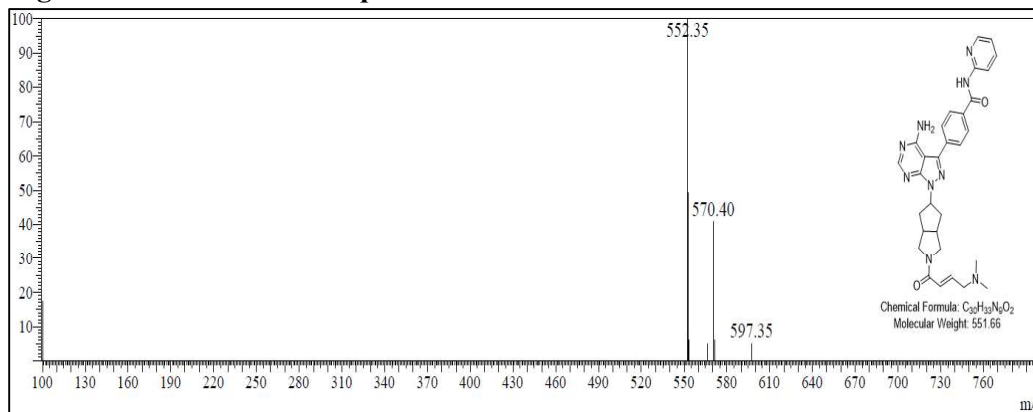


Figure 214. UPLC of 32aq

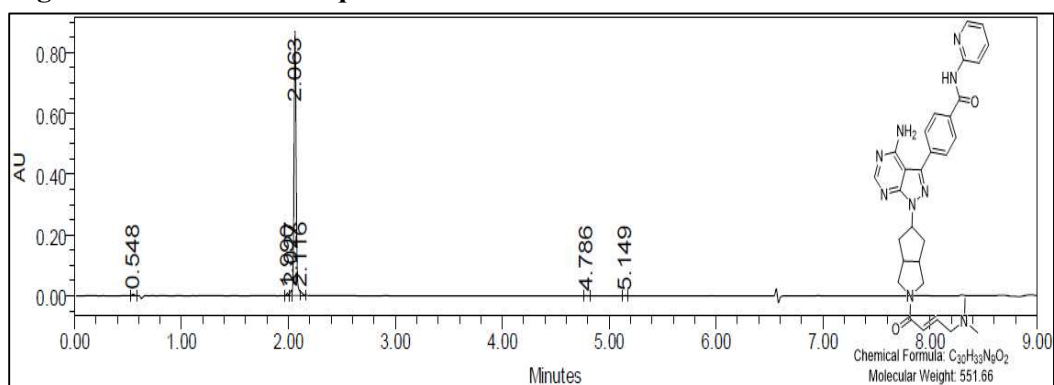
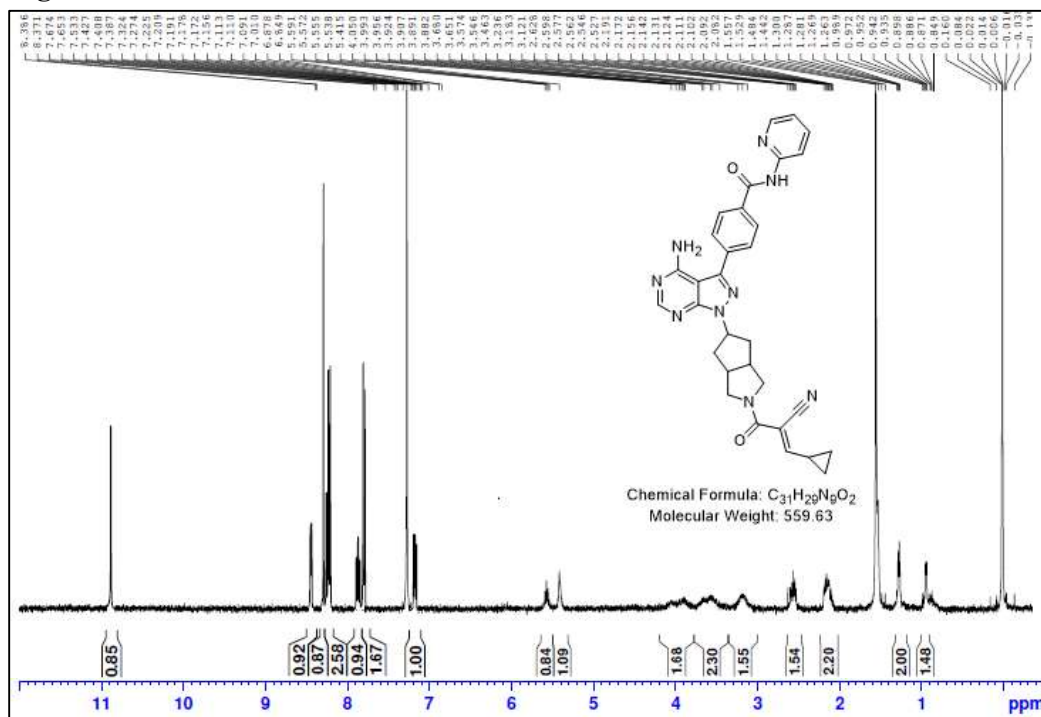
Figure 215. 1H NMR of 32ar

Figure 216. ESI-MS of 32ar

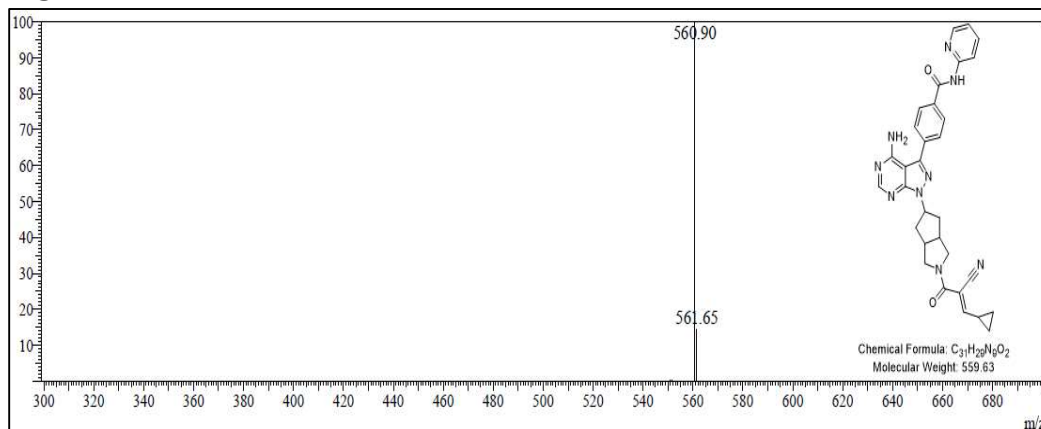


Figure 217. UPLC of 32ar

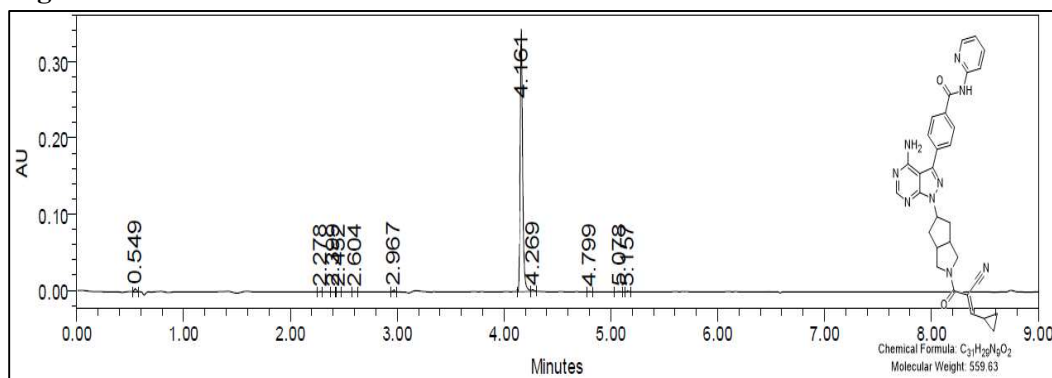
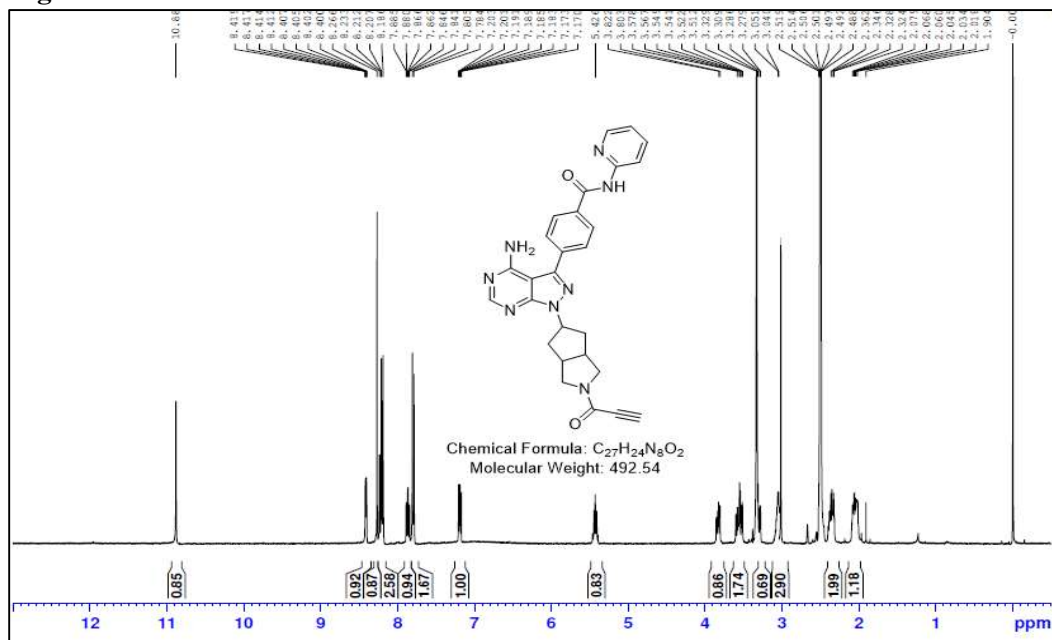
Figure 218. 1H NMR of 32as

Figure 219. ESI-MS of 32as

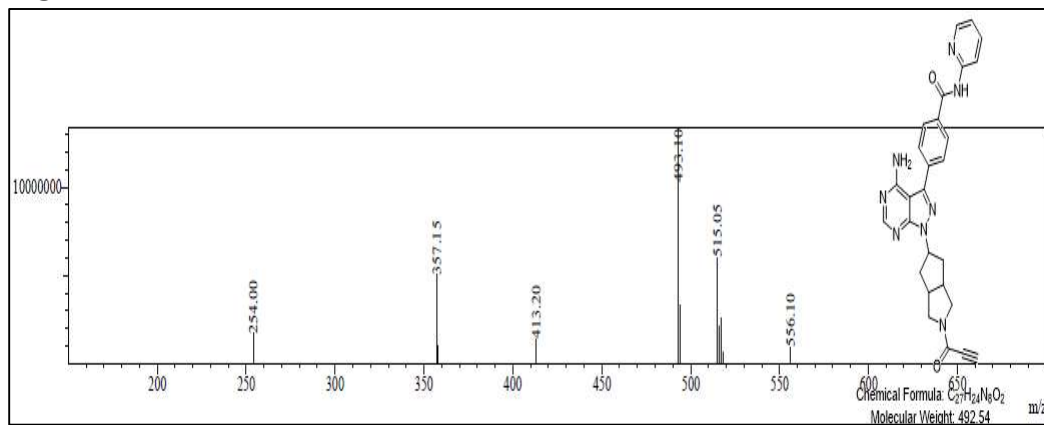


Figure 220. UPLC of 32as

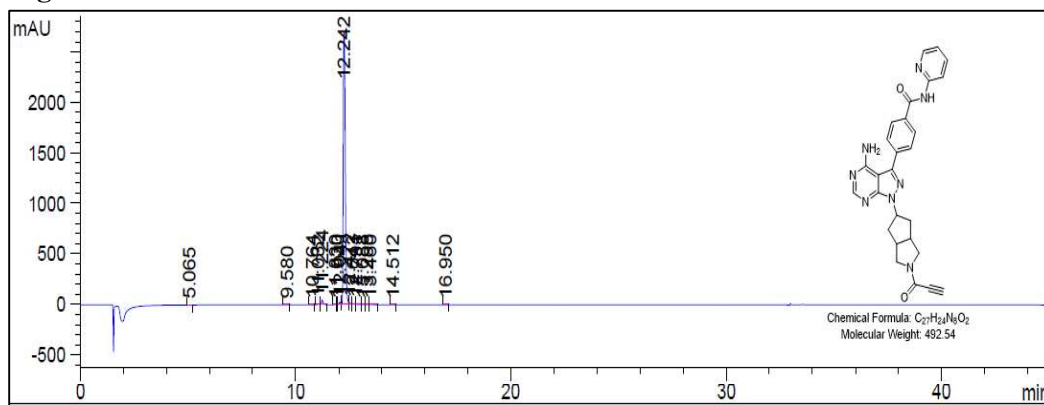


Figure 222. ESI-MS of 32at

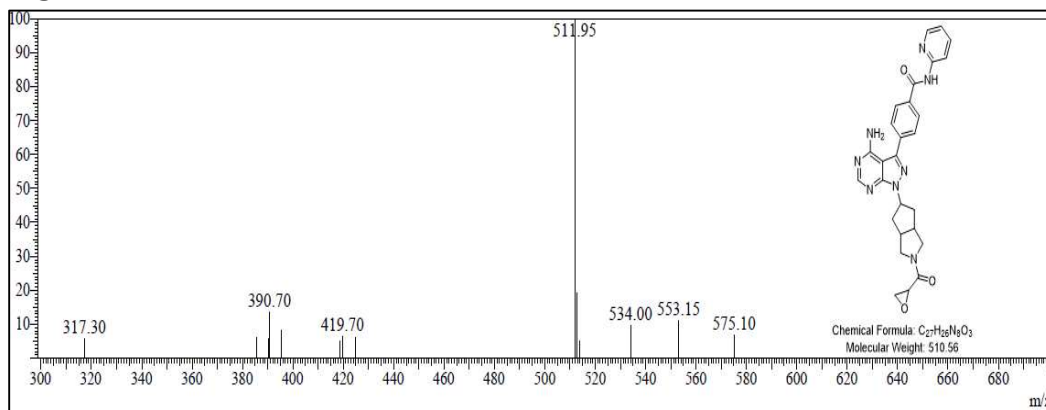


Figure 223. UPLC of 32at

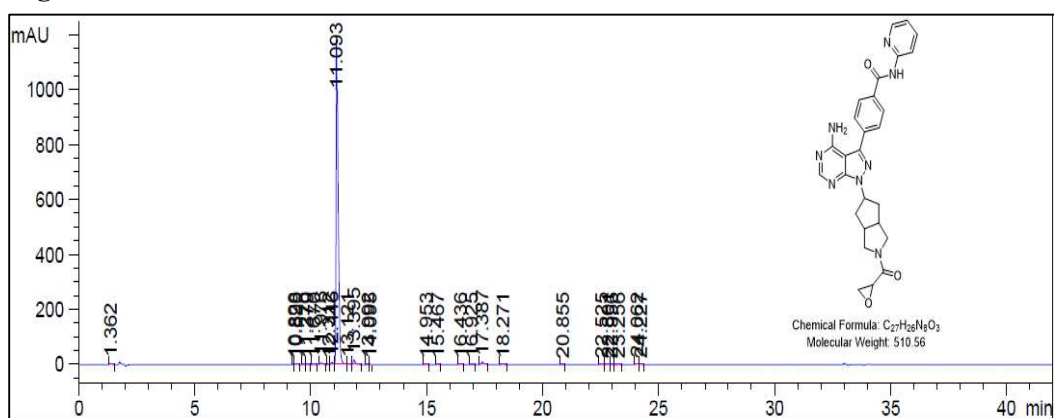
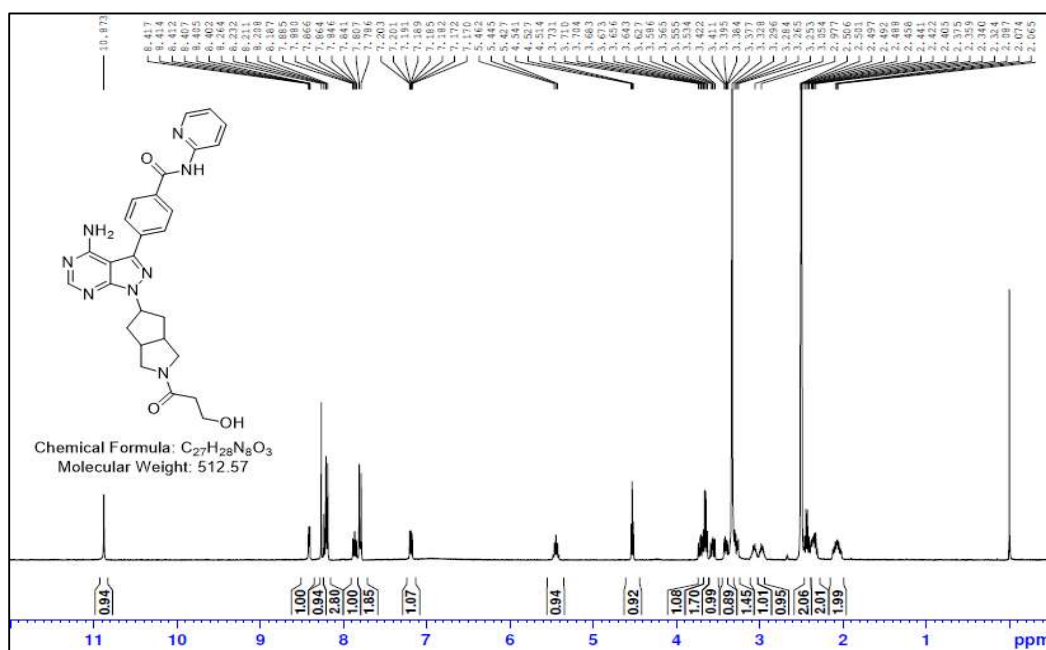
Figure 224. 1H NMR of 32au

Figure 225. ESI-MS of 32au

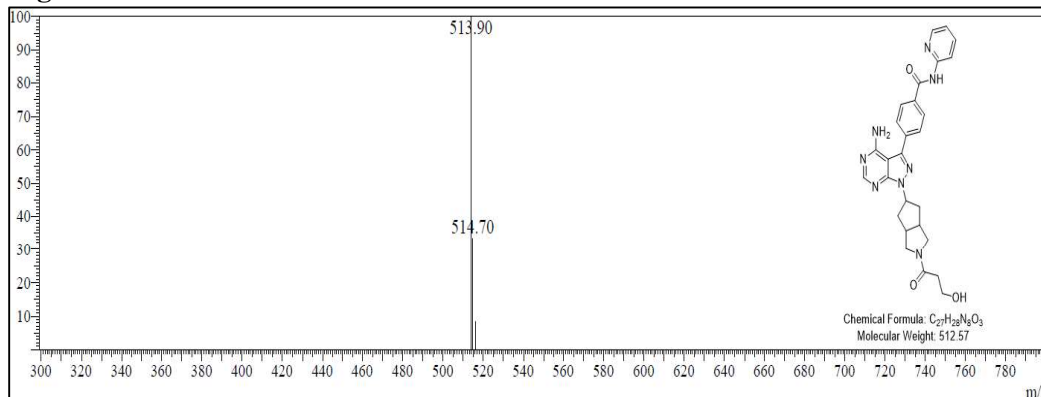


Figure 226. UPLC of 32au

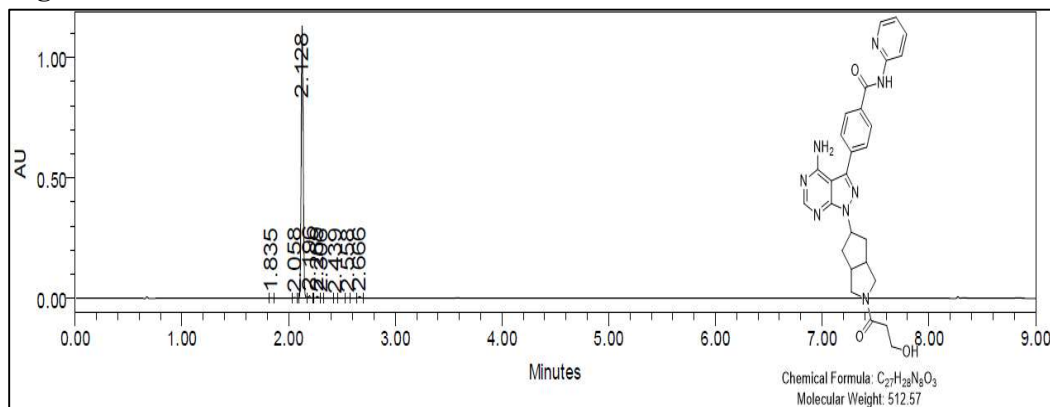
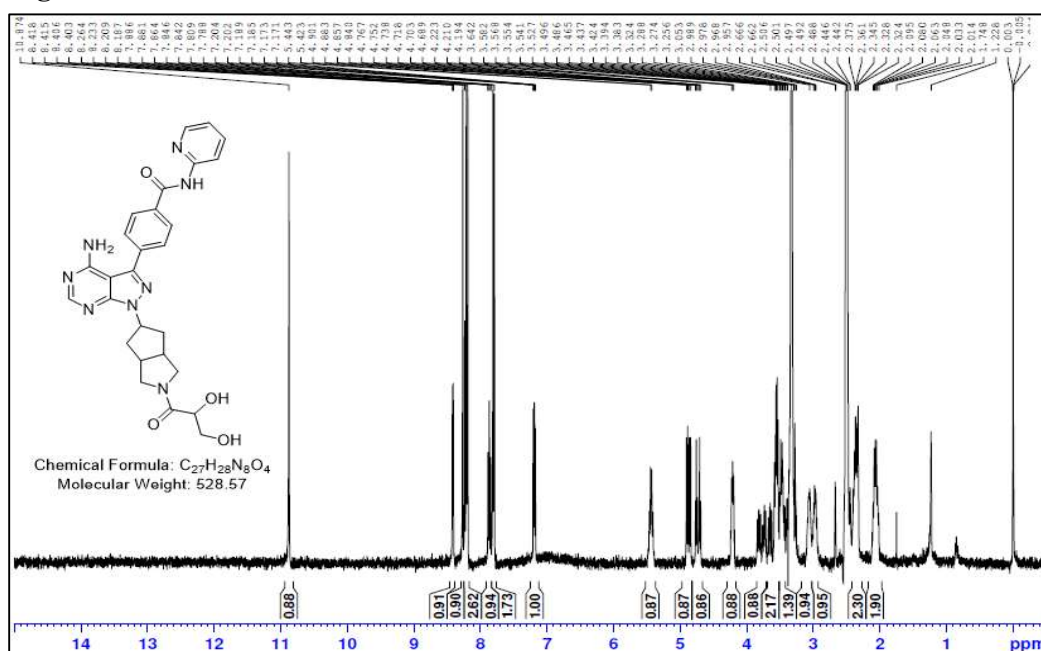
Figure 227. 1H NMR of 32av

Figure 228. ESI-MS of 32av

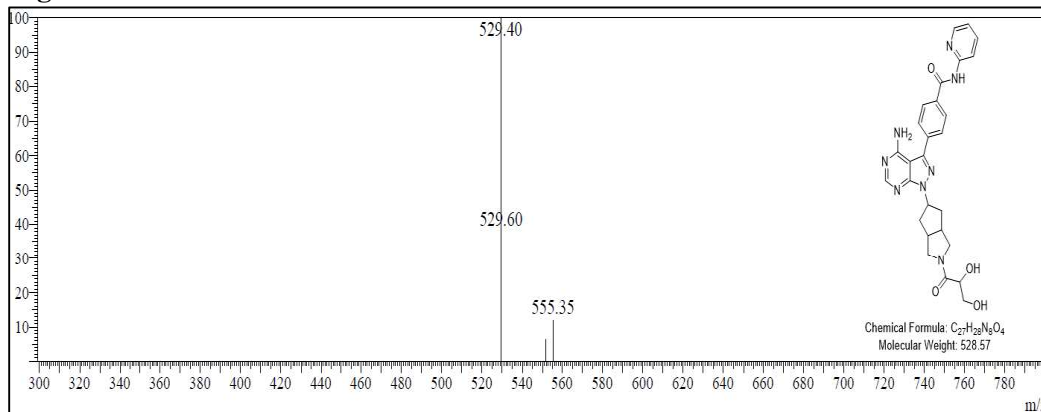


Figure 229. UPLC of 32av

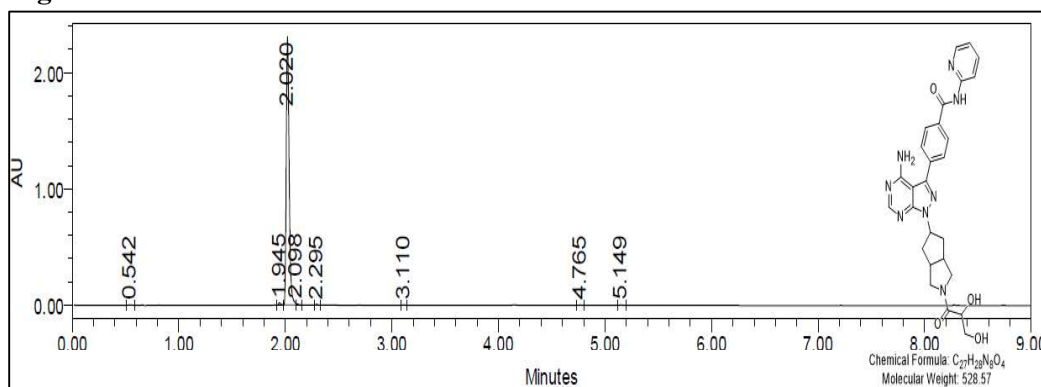
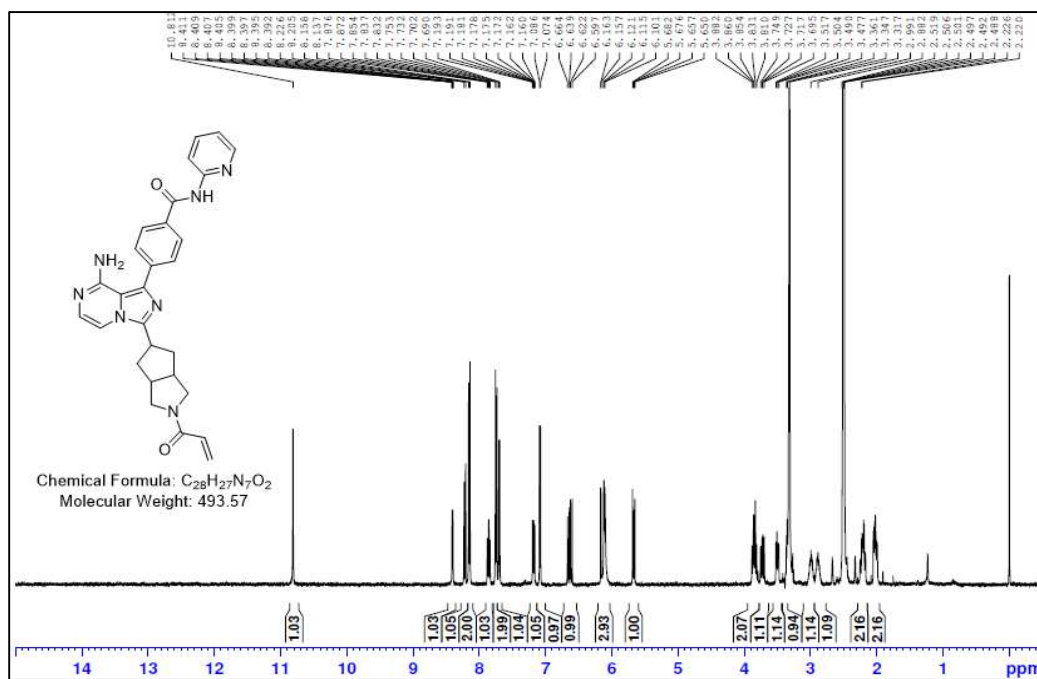
Figure 230. 1H NMR of 41

Figure 231. ESI-MS of 41

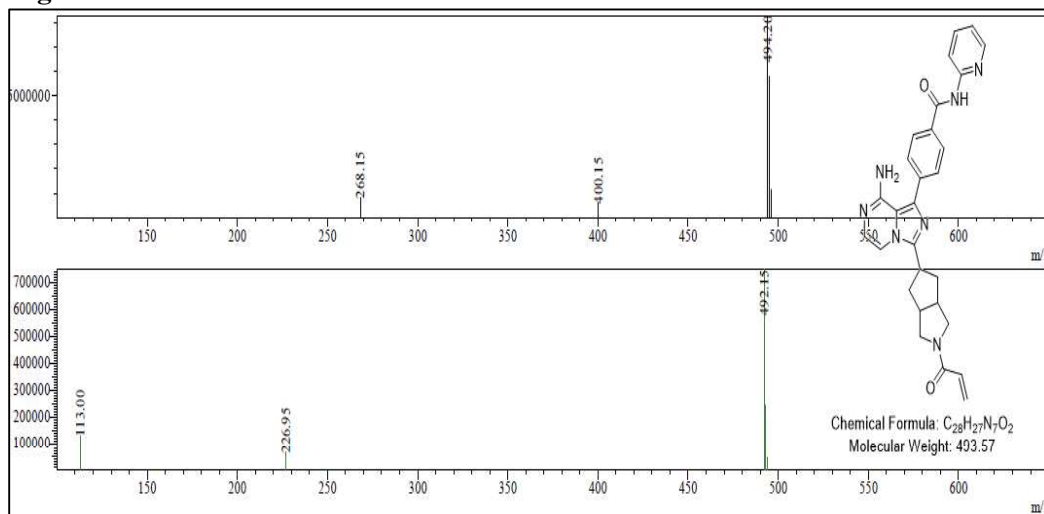


Figure 232. UPLC of 41

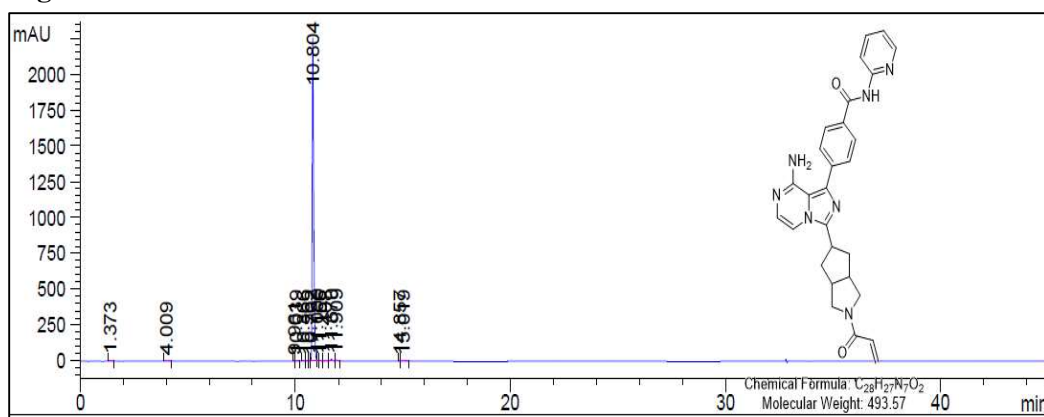


Figure 233. ^1H NMR of 42

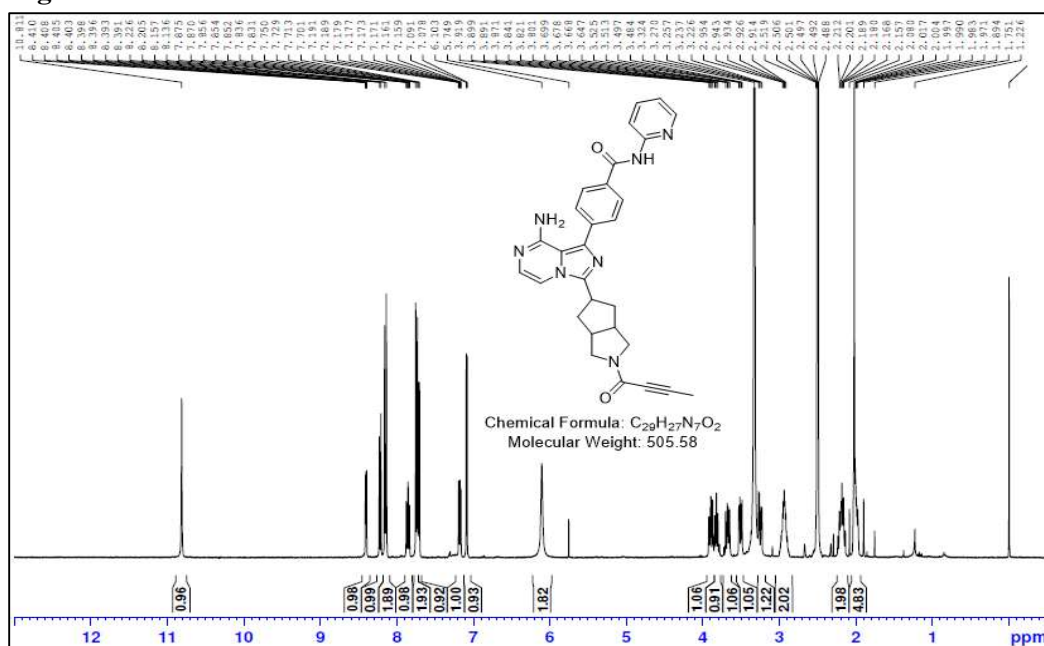


Figure 234. ESI-MS of 42

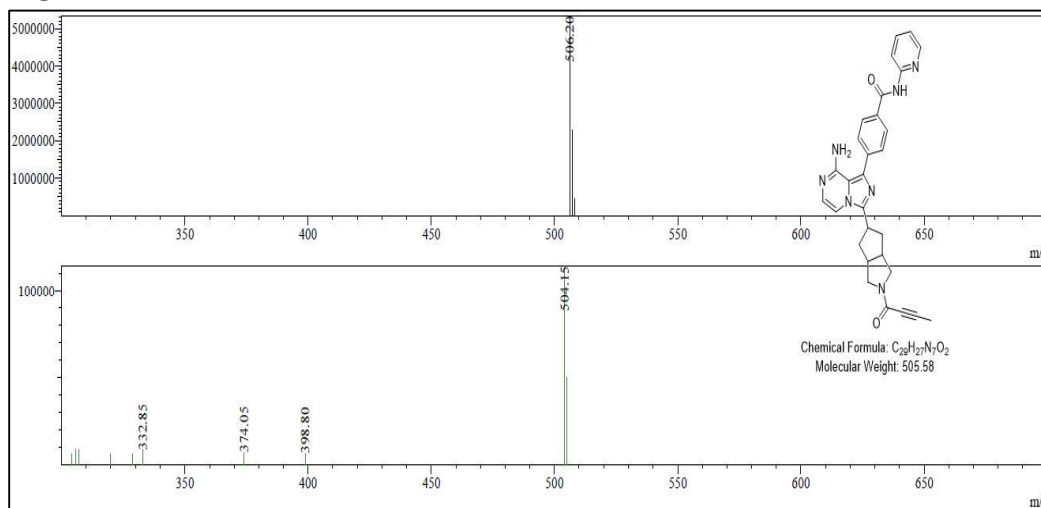


Figure 235. UPLC of 42

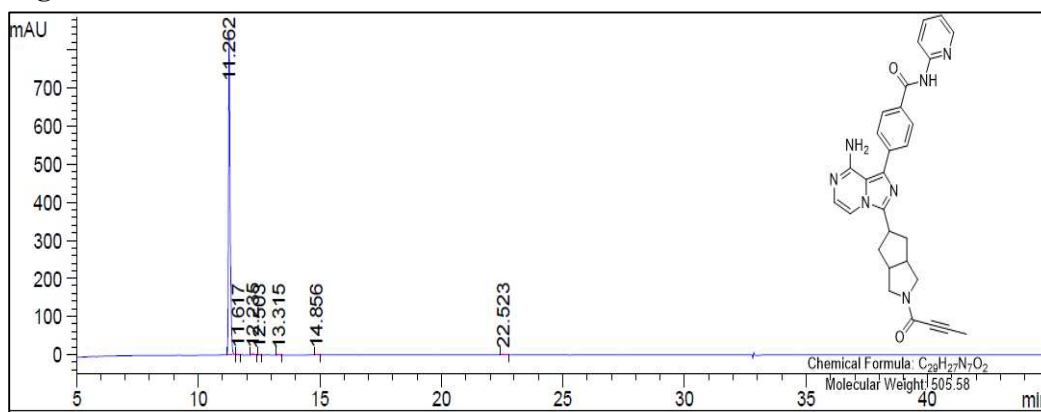
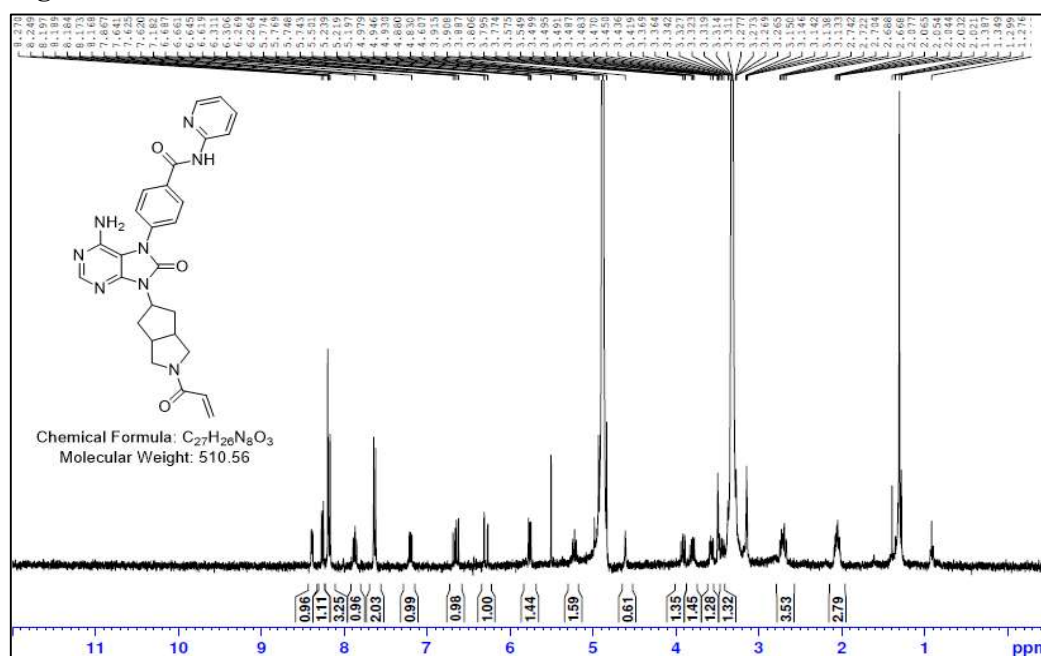
Figure 236. 1H NMR of 51

Figure 237. ESI-MS of 51

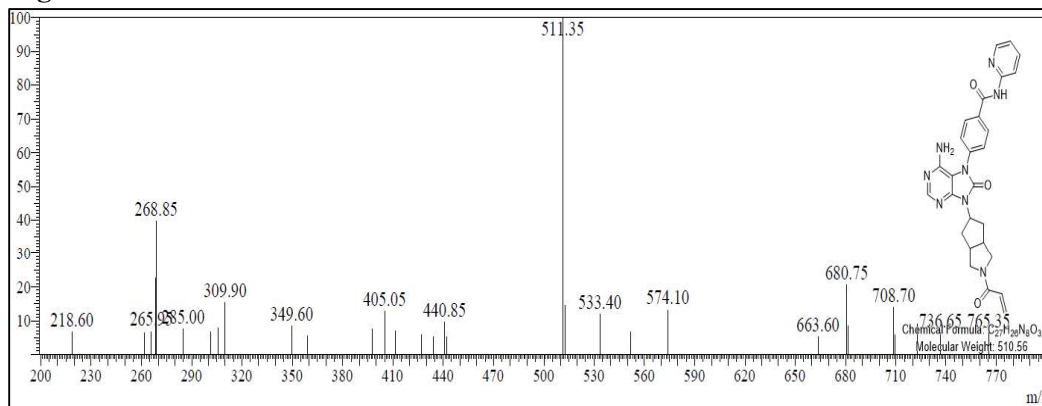


Figure 238. UPLC of 51

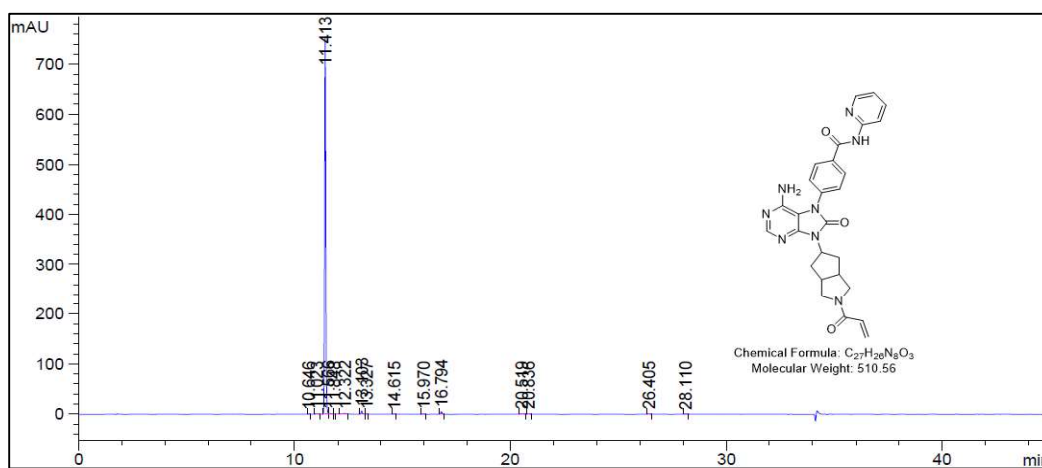
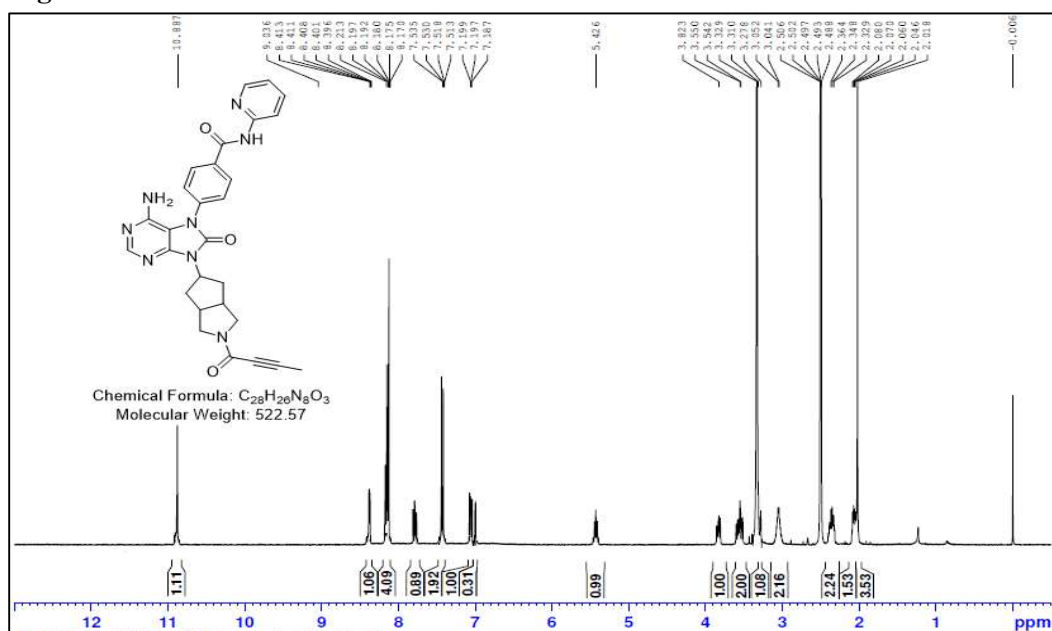
Figure 239. 1H NMR of 52

Figure 240. ESI-MS of 52

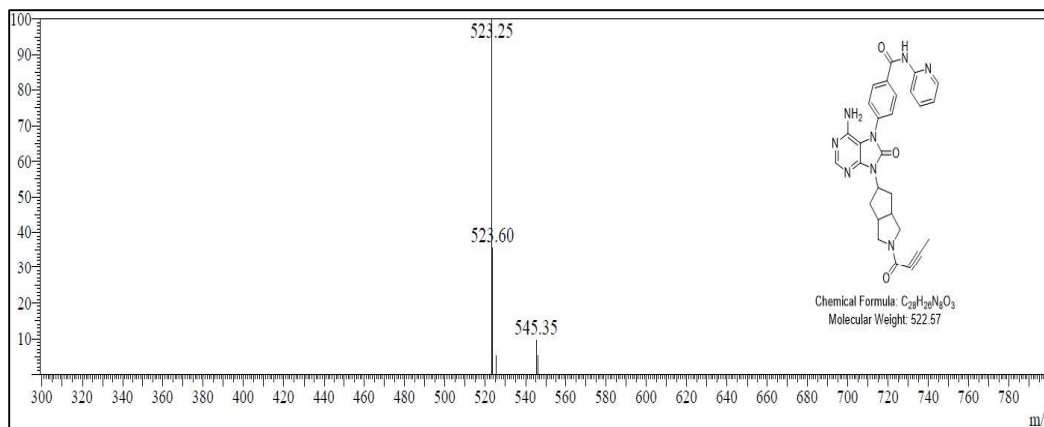


Figure 241. UPLC of 52

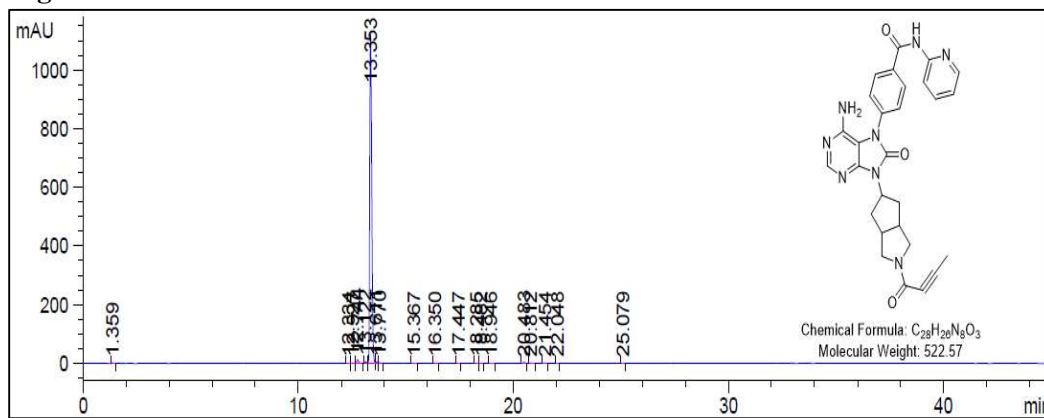
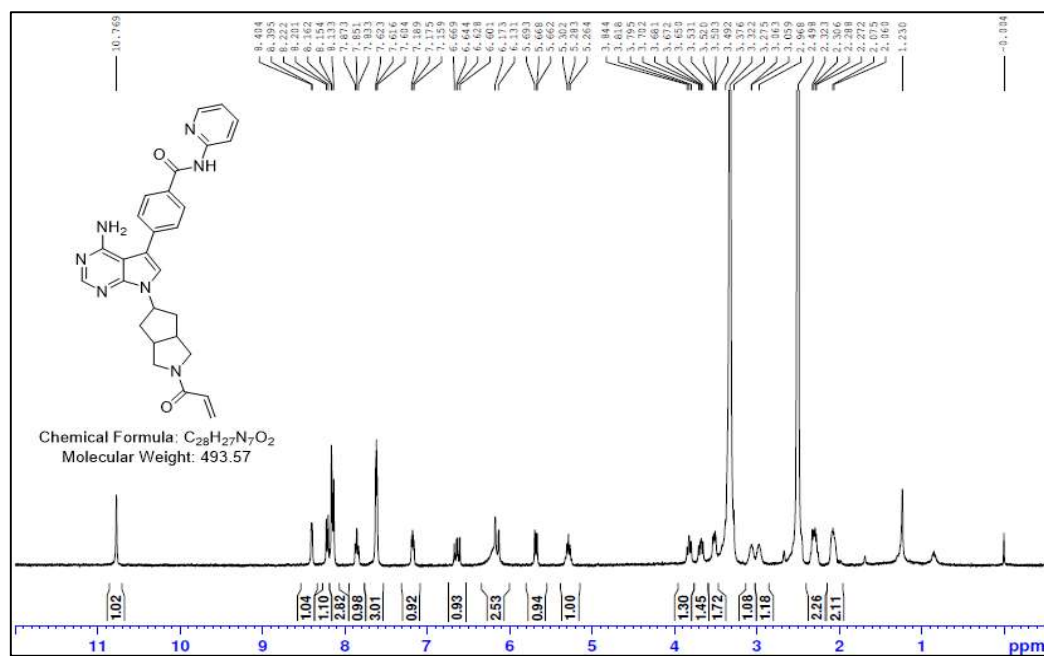
Figure 242. 1H NMR of 61

Figure 243. ESI-MS of 61

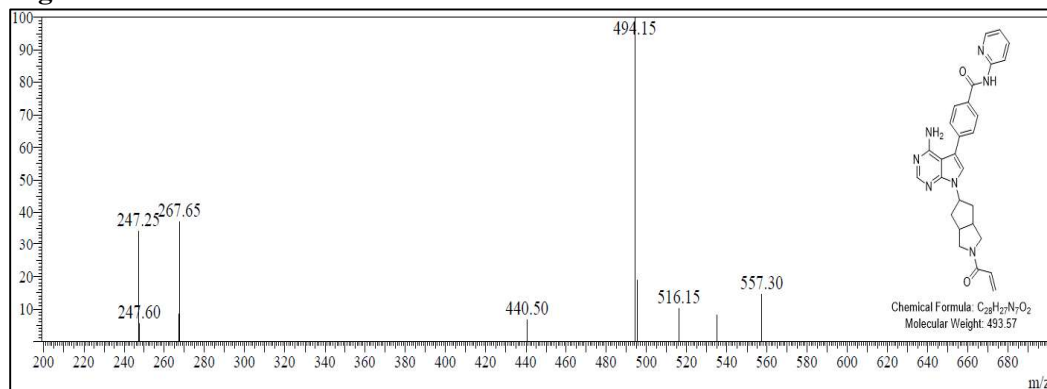


Figure 244. UPLC of 61

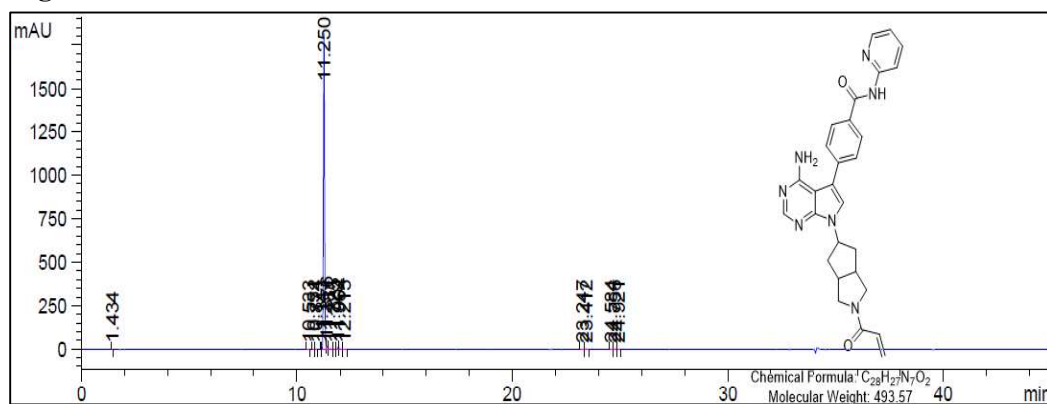
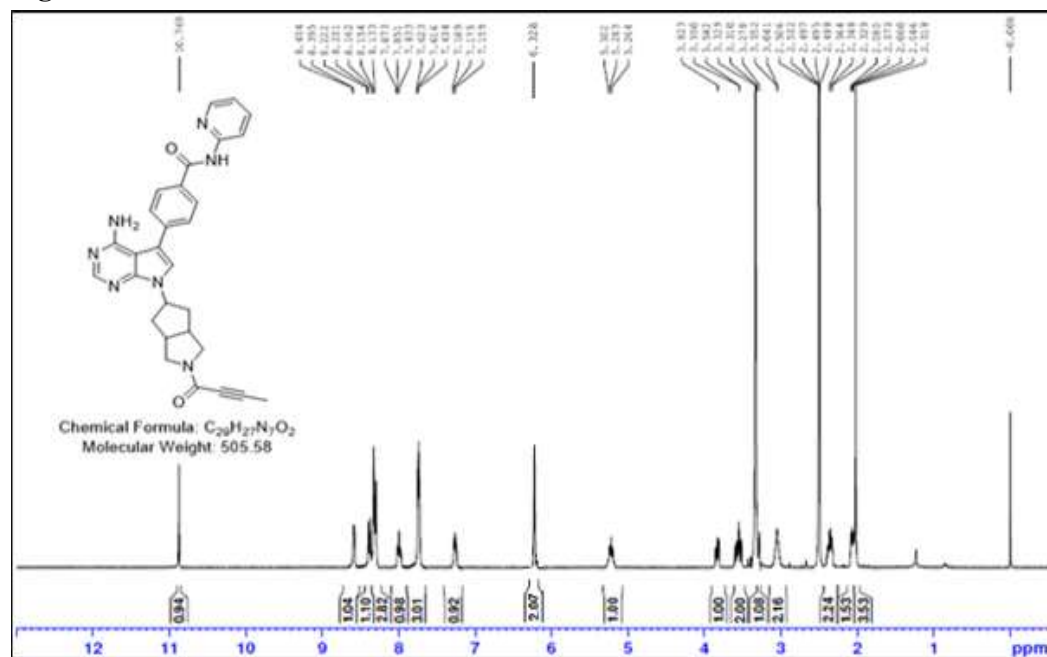
Figure 245. 1H NMR of 62

Figure 246. ESI-MS of 62

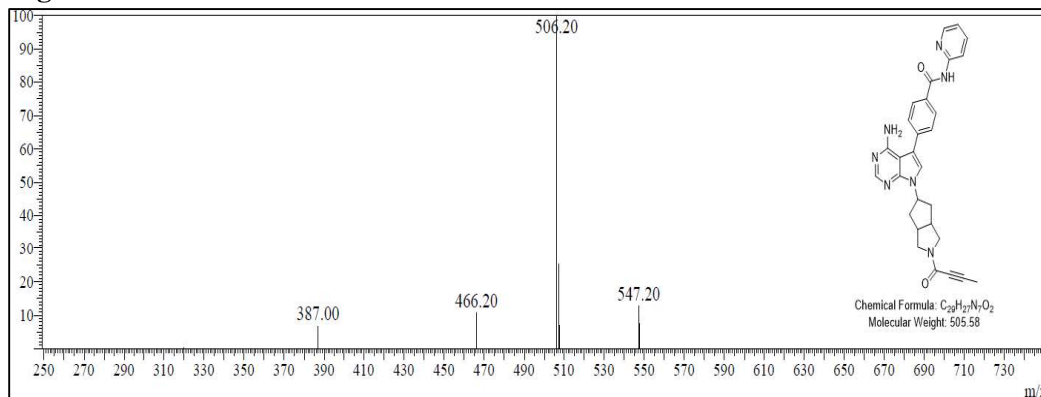


Figure 247. UPLC of 71

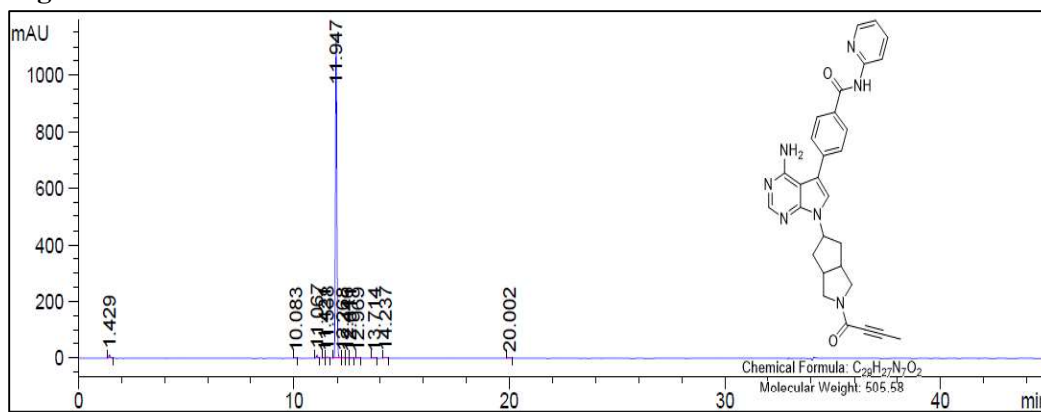
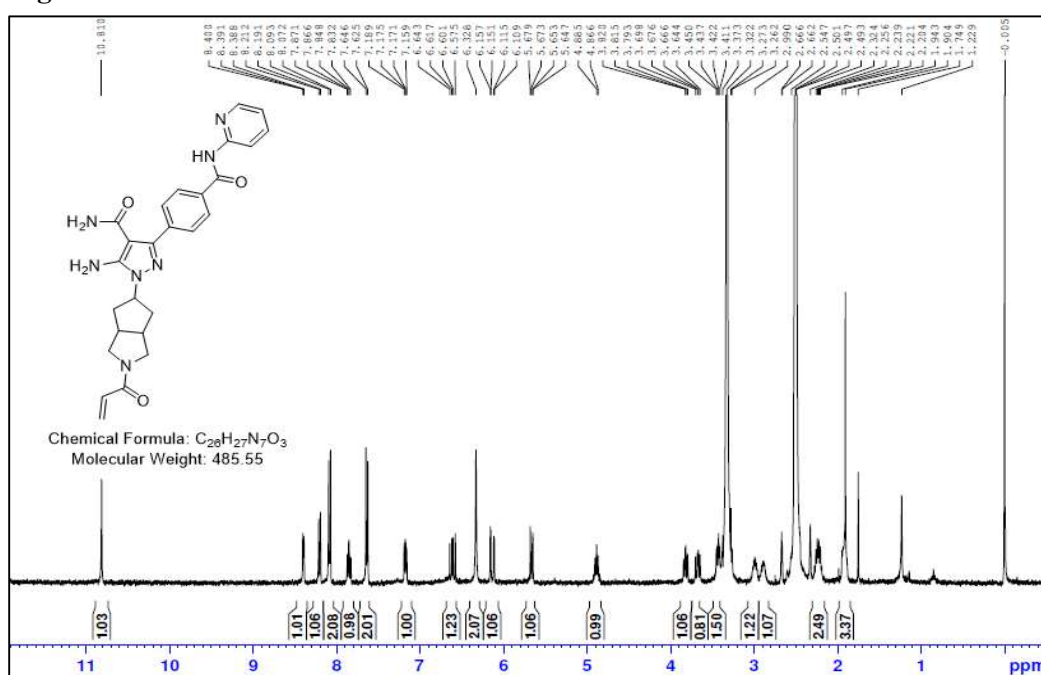
Figure 248. 1H NMR of 71

Figure 249. ESI-MS of 71

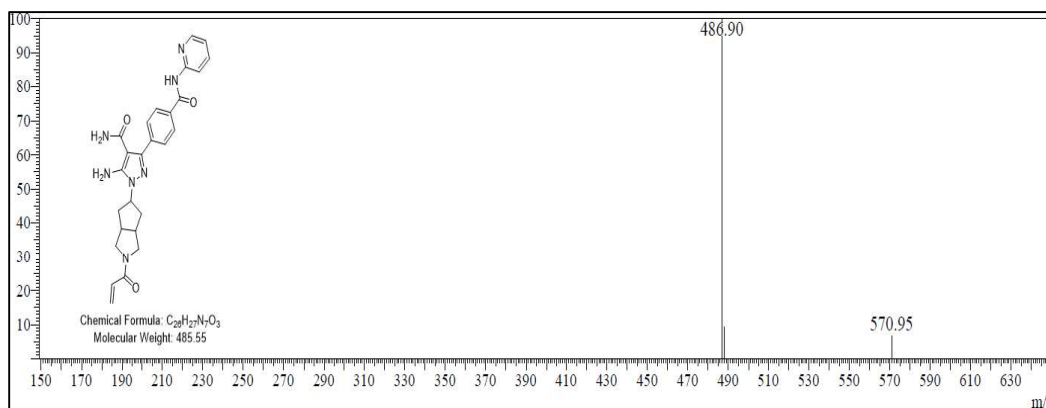


Figure 250. UPLC of 71

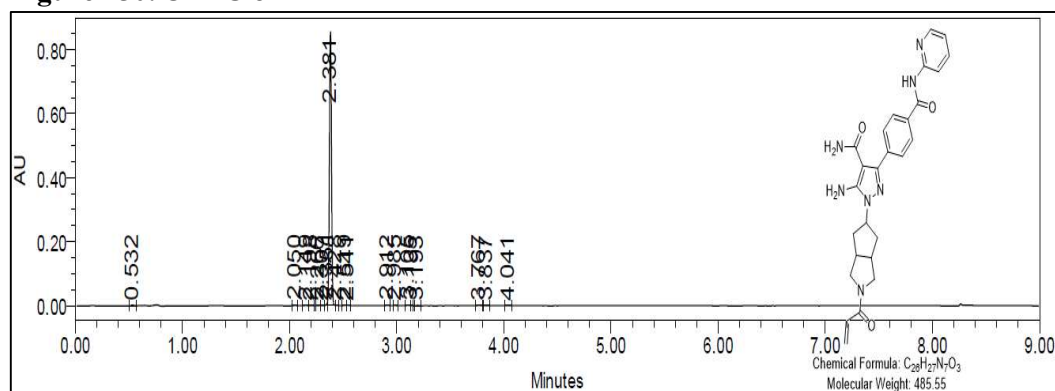


Figure 251. ^1H NMR of 72

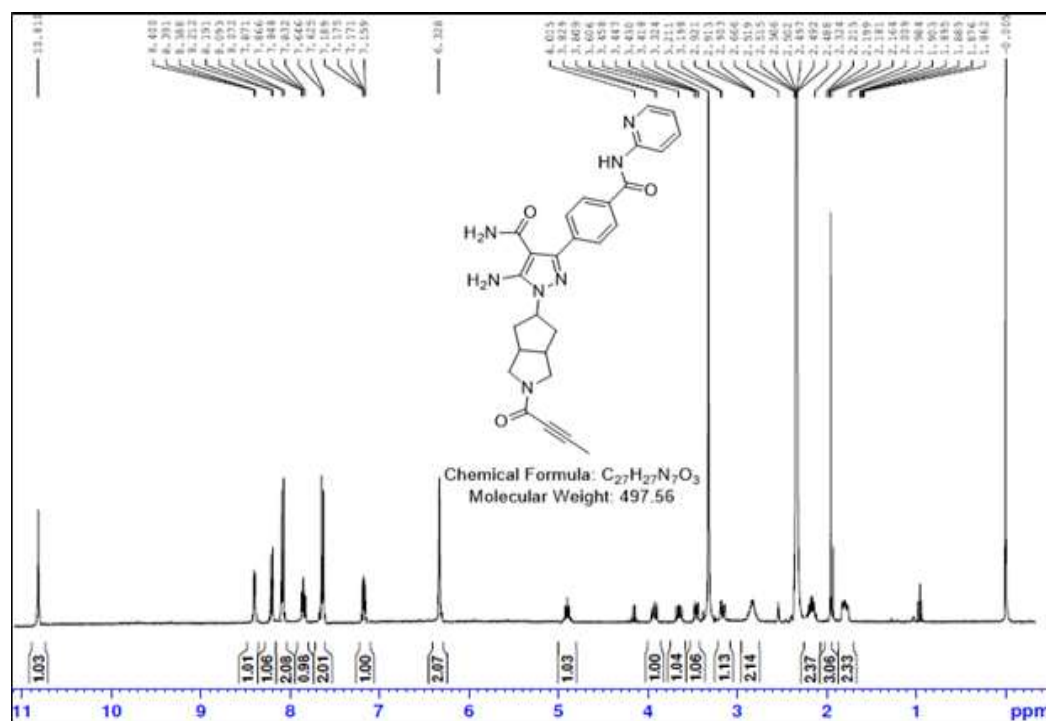


Figure 252. ESI-MS of 72

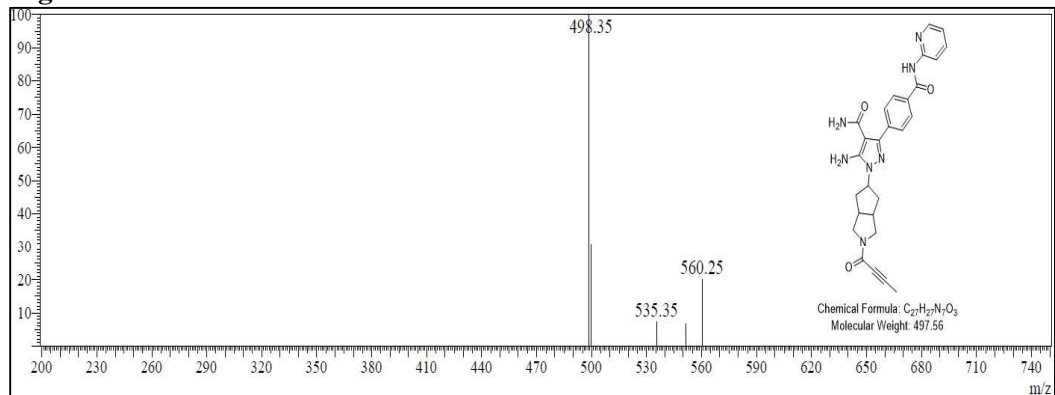


Figure 253. UPLC of 72

