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Synthesis of 1-alkyl succinimidoanthracenyl-4-((naphthalene-1-yloxy)methyl)-1H-1,2,3-triazoles

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ABSTRACT

Regioselective synthesis of a series of 1,4-disubstituted of1-alkyl succinimidoanthracenyl-4-((naphthalene-1-yloxy)methyl)-1H-1,2,3-triazolesemploying click reaction is presented. Highly selective and efficient copper(I)-catalysed 1,3-dipolar cyclo addition between 1-naphthylpropargylic ether and azido alkylsuccinimidoanthracenyl yielded the title compounds in 74% to 94%. The structure of all the new 1,2,3-triazoles was characterized by 1HNMR,13C NMR, IR and Mass.

Keywords. Naphthyl propargylicether; azidoalkyl; Azidosuccinimidoanthracenyl; 1,3-Dipolar cycloaddition; Regioselective.

INTRODUCTION

With increasing demand to synthesis oftriazole derivatives are knownto exhibit various pharmacological properties such as anti-microbial [1],anti-inflammatory [2],cytotoxic [3],anticonvulsant [4],analgesic [5]and anti-viral [6].Triazoleshave also been incorporated in a wide variety of therapeutically interesting drugs including H1/H2 histamine receptor and antimycotic drugs such as fluconazole, itraconazole and voriconazole. On the other hand, heterocycles containing the naphthol nucleus also exhibit various biological activities for instance, 2-naphthol derivatives have been reported as potential cognition enhancers [7].2-Substituted-1-naphthol derivatives were shown to inhibit the activities of cyclooxygenase and 5-lipooxygenase. 1-Naphthol derivatives were found to possess potent anti-amnesic activity and many natural and synthetic compounds based on tricyclic planar chromophore framework, consisting of anthraquinone, anthrapyrazole and acridine, show interesting cytostatic and antitumor properties [8].Anthracene possesses an electron rich and planar structure, which is suitable as DNA intercalator [9].Anthracene derivatives are among the many molecules that have been investigated for their DNA binding and some of these constitute an important class of drugs in anticancer therapy [10]. Intercalation was proposed by Lerman as a mode of DNA binding by planar aromatic molecules like anthracene which can easily slide between stacked nucleic acid base pairs [10,11].Some of the anthracene derivatives are known to interact with DNA thus affecting DNA replication process [12]. Kumar *et al.*[13],the anthracycline antibiotics and their analogues remain a key class of compounds for cancer chemotherapy [14]. Some of the anthracycline analogs are able to reverse multi drug resistance (MDR) [15]. Palmer *et* al [16], synthesized anthracene conjugates to target anthracene to human cancer cells as a method of selective drug delivery. Some anthracene carbohydrate hybrids were found to be DNA cleaving and cytotoxic agents [17].The pharmacological importance triazoles has promted us to synthesize a series of novel 1-alkyl succinimidoanthracenyl-4-((naphthalene-1-yloxy)methyl)-1H-1,2,3-triazoles. The synthetic route utilized is the “click reaction” which is Cu(I) catalyzed [3+2] cycloaddition popularized by Sharpless and Meldal as the key transformation to build up the triazole ring [18]. Herein, we report the facile regioselective synthesis of a series of succinimidoanthracenyl based 1,2,3-triazoles employing click reaction. Herein, we report the facile regioselective synthesis of a series of naphthol-based 1,2,3-triazoles employing click reaction.

MATERIALS AND METHODS

Materials and apparatus

Spectroscopic grade organic solvents were obtained from Finar Chemicals. Starting and other chemicals and reagents were purchased from Sigma–Aldrich unless otherwise stated and were used without further purification. Thin layer chromatography (TLC) was performed on silica gel 60 F254 aluminum plates (Merck). The reported melting points were uncorrected and determined in Polmon instrument (model No. MP-96). The IR spectra were recorded on Bruker Infrared model Tensor-27. 1H NMR and 13C NMR were recorded on a Bruker400 MHz Ultrashield spectrometer. The ESI mass spectra were recorded on a VG micro mass 7070-H.

General procedure for the synthesis of naphthylpropargylicethers (10 I-II)

Naphthylpropargylic ethers were synthesized starting from compound **I-II** as shown in **scheme-1.**Naphthylpropargylicethers **(10 I-II)**were synthesized according to reported procedure [19].

Synthesis of 9,10-dihydro-9,10-ethanoanthracene-11,12-disuccinimide(4)

Maleic anhydride(**1**) on treatment with concentrated ammonia forms maleimide (**2**). The maleimide on cycloaddition with anthracene**(3)** for 3hrs yielded 9,10-dihydro-9,10-ethanoanthracene-11,12-disuccinimide**(4)** as a single product. On filtration of the reaction mixture.The physical and the spectral properties ofcompound**(4)** tallied with the reported values**(4),** is obtained as white crystalline solid melting at 300-301°C. In ^{1}H NMR the NH proton appeared at δ 10.9 as sharp singlet which disappeared in D_2O. The IR spectrum of compound**(4)** has given a medium intense broad band at 3346 cm^{-1}. This is attributable to the N-H stretching vibration of the imide. The protons at 9 and 10 carbons gave a signal at δ 4.70The imide carbonyl appeared at 178.2 in ^{13}C NMR.

Synthesis of 13-(ω-bromoalkyl)--11,15-dihydro-9H-9,10-[3,4]epipyrroloanthracene-12,14(10H,13H)-dione(6 a-f)

To a solution of compound **(4)** (0.5gm,1mmol) in acetonitrile (30 mL), anhydrous potassium carbonate (546 mg, 4 mmol) and terminal dibromoalkane**(5 a-f)** (730 mg,3 mmol) were added and the mixture was refluxed for 12 h. After completion of the reaction, anhydrous potassium carbonate was removed by filtration and the solvent was evaporated under reduced pressure to get the crude product. This was further purified by column chromatography (10% EtOAc-hexane) to afford the compound**(6 a-f).**

Synthesis of 13-(ω-azidoalkyl)-11,15-dihydro-9H-9,10-[3,4]epipyrroloanthracene-12,14(10H,13H)-dione(7 a-f)

One equivalent of the 13-(ω-bromoalkyl)--11,15-dihydro-9H-9,10-[3,4]epipyrroloanthracene-12,14(10H,13H)-dione**(6 a-f)**(0.5gm,1 mmol) was dissolved in 10mL of DMF and to this mix was added two equivalents of sodium azide. The mixture was stirred at 80^{o}C for 12hr. After completion of the reaction the DMF was removed in vacuo and poured into ice cold water. The compound was **(7 a-f)** extracted with chloroform after evaporation of chloroform dried over anhydrous Na_2SO_4 and the pure compound are collected**(7 a-f).**

General experimental procedure for the synthesis of 1-alkyl succinimidoanthracenyl-4-((naphthalene-1-yloxy)methyl)-1H-1,2,3-triazoles(11 I-II a-f)

Compound **(10 I-II)** (2mmol) andazides**(7_{a-f})** (2mmol) was dissolved in 10 mL of DMF. To this mixture of $CuSO_4.5H_2O$ (25mg, 0.1mmol) and sodium ascorbate (39mg,0.2mmol) aqueous solution are added and stirred at 80^{o}C for 12hr. The mixture was poured into 25 mL of water and was extracted with $CHCl_3$ (3X25mL). The organic layers were combined and washed with water (20 mL) and dried over anhydrous Na_2SO_4. The solvent was evaporated in vacuo to give the crude product. The crude product was purified by column chromatography using hexane:ethylacetate (9:1% to 6:4%) as eluent to afford the pure products**(11 I-II a-f).**

Spectral Data

9,10-dihydro-9,10-ethanoanthracene-11,12-disuccinimide(4)

Yield 86 % M.P 301-303^{0}C; IR (KBr) (cm^{-1}) 3346, 3040, 2939, 1786, 1728, 1460 1338, 1288, 1213, 1155. 1020. ^{1}H NMR ($CDCl_3$, 400MH_Z) δ = 3.18 (s, 2H), 4.70 (s, 2H), 7.12 (m, 4H), 7.24 (m, 2H), 7.42 (m, 2H), 10.74 (br, s, 1H), ^{13}C NMR ($CDCl_3$, 400MH_Z) δ = 45.0, 48.1, 124.5, 125.1, 126.6, 126.8, 139.9, 142.9, 178.2. ESI-MS: m/z276 $[M+H]^+$.

13-(3-bromopropyl)-11,15-dihydro-9H-9,10-[3,4]epipyrroloanthracene-12,14(10H,13H)-dione(6 b)

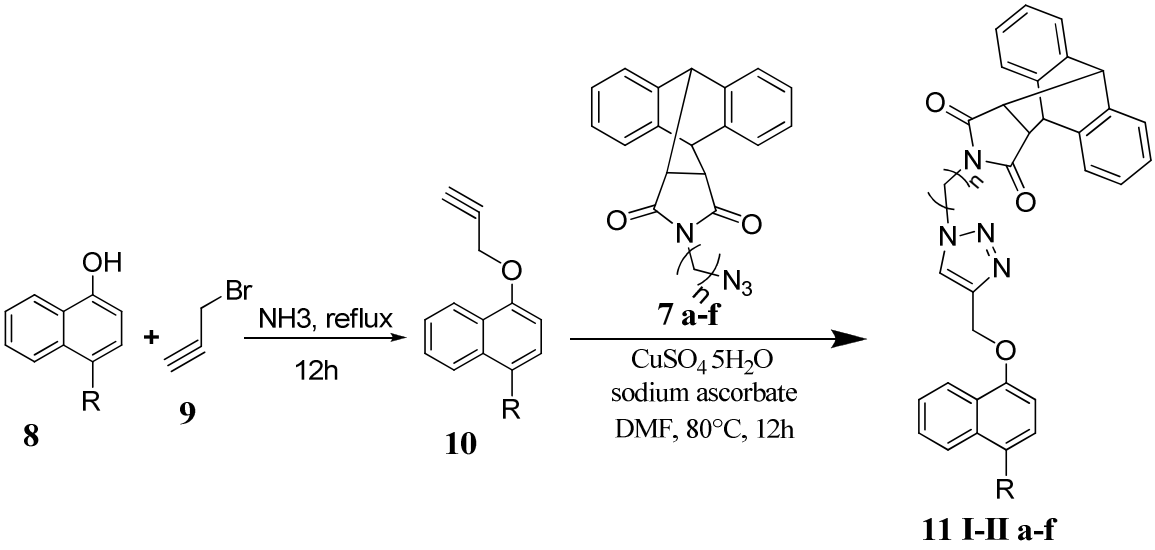
Yield 87% MP: 168-170^{o}C; IR (KBr, cm-1): 3525, 2926, 2854, 2314, 1776, 1701, 1548, 1529, 1458, 1429, 1394, 1355, 1319, 1253, 1190, 1145; 1H NMR (400MHz, $CDCl_3$): (δ)1.374 (m, 2H), 2.722 (t, 2H, *J* = 2Hz), 3.205 (d, 2H, *J* = 1.6Hz), 3.261 (t, 2H, *J* = 6.4Hz), 4.790 (d, 2H, *J* = 1.2Hz), 7.176 (t, 4H *J* = 4Hz), 7.381 (d, 4H, *J* = 3.2Hz), ^{13}CNMR DMSO-d_6, 400MHz) (δ) 29.743, 30.523, 37.106, 45.521, 46.812, 125.038, 126.804, 127.169, 176.764. ESI-MS: m/z396 $[M+H]^+$.

13-(4-bromo butyl)-11,15-dihydro-9H-9,10-[3,4]epipyrroloanthracene-12,14(10H,13H)-dione(6 c)
Yield 89% MP: 160-162^{o}C; IR (KBr, cm-1): 3448, 3392, 3018, 2939, 2856, 2314, 1965, 1770, 1695, 1643, 1462, 1431, 1394, 1338, 1298, 1253, 1205, 1139, 1004; 1H NMR (400MHz, DMSO-*d*6) (δ)0.987 (m, 2H), 1.213 (m, 2H), 2.031 (t, 2H, *J* = 3.2Hz), 3.156 (t, 2H, *J* = 2Hz), 3.443 (d, 2H, *J* = 1.6Hz), 4.787 (d, 2H, *J* = 2Hz), 7.182 (t, 4H *J* = 3.6Hz), 7.371 (d, 4H, *J* = 3.2Hz); ^{13}CNMR DMSO-$d_{6,}$ 400MHz) (δ) 25.870, 29.152, 32.841, 37.486, 45.512, 46.797, 124.253, 125.068, 127.068, 176.845. ESI-MS: m/z410 $[M+H]^+$.

13-(5-bromo pentyl)-11,15-dihydro-9H-9,10-[3,4]epipyrroloanthracene-12,14(10H,13H)-dione(6 d)
Yield 88 % MP: 120-122^{o}C; IR (KBr, cm-1): 3442, 2941, 2856, 2310, 1766, 1691, 1643, 1539, 1460, 1431, 1396, 1354, 1249, 1195, 1139, 1016; 1H NMR (400MHz, DMSO-*d*6) (δ) (δ)0.779 (m, 2H), 0.970 (m, 2H), 1.894(m, 2H), 3.117 (t, 2H, *J* = 7.2Hz), 3.303 (t, 2H, *J* = 6.8Hz), 3.434 (t, 4H, *J* = 6.8Hz), 7.128 (t, 4H *J* = 2Hz), 7.377 (d, 4H, *J* = 2.4Hz); ^{13}CNMR DMSO-$d_{6,}$ 400MHz) (δ) 24.968, 26.199, 32.135, 33.185, 38.069, 45.550, 46.774, 125.070, 126.746, 126.921, 176.857. ESI-MS: m/z424 $[M+H]^+$.

13-(6-bromo hexyl)-11,15-dihydro-9H-9,10-[3,4]epipyrroloanthracene-12,14(10H,13H)-dione(6 e)
Yield 89 % MP: 100-102^{o}C; IR (KBr, cm-1): 3458, 3066, 3024, 2931, 2856, 2318, 1957, 1772, 1697, 1460, 1433, 1398, 1342, 1288, 1253, 1192, 1138, 1026; 1H NMR (400MHz, DMSO-*d*6) (δ) 0.77 (m, 2H), 0.862 (m, 2H), 1.234 (m, 2H), 1.757 (m, 2H), 3.106 (t, 2H, *J* = 7.6Hz), 3.190 (t, 2H, *J* = 1.2Hz), 3.377 (t, 2H, *J* = 6.8Hz), 4.781 (s, 2H), 7.135 (t, 4H *J* = 2Hz), 7.290 (d, 4H, *J* = 3.2Hz); ^{13}CNMR DMSO-$d_{6,}$ 400MHz) (δ) 25.578, 26.890, 27.292, 27.584, 32.514, 38.296, 45.565, 46.783, 124.229, 125.033, 126.964, 176.874. ESI-MS: m/z438 $[M+H]^+$.

13-(6-azidohexyl)-11,15-dihydro-9H-9,10-[3,4]epipyrroloanthracene-12,14(10H,13H)-dione(7 e)
Yield 88 % MP: 155-157^{o}C; 1H NMR (400MHz, DMSO-*d*6) (δ) 0.776 (m, 2H), 0.869 (m, 2H), 1.174 (m, 2H), 1.484 (m, 2H), 3.105 (t, 2H, *J* = 7.2Hz), 3.193 (t, 2H, *J* = 2Hz), 3.235 (t, 2H, *J* = 6.8Hz), 4.810 (s, 2H), 7.126 (m, 2H), 7.174 (m, 2H), 7.281 (m, 2H), 7.378 (m, 2H). ESI-MS: m/z401 $[M+H]^+$.



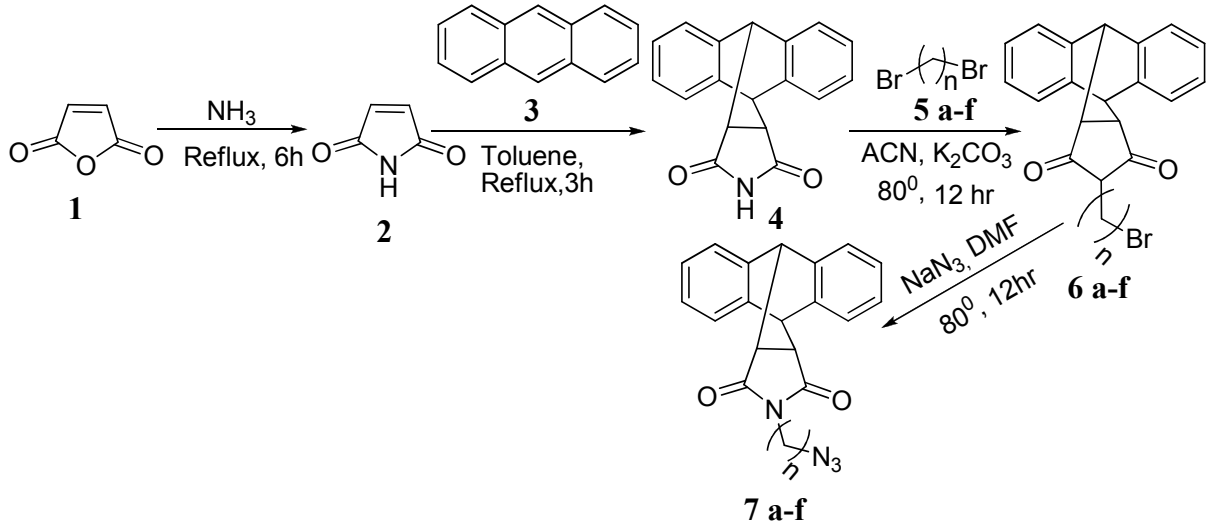
Here R = H-I, R = OCH_3-II, n = 2 = a, 3 = b, 4 = c, 5 = d, 6 = e, 8 = f

Scheme 1: Synthesis of 1-alkyl succinimidoanthracenyl-4-((naphthalene-1-yloxy)methyl)-1H-1,2,3-triazoles(11 I-II a-f)

1-Ethylsuccinimidoanthracenyl-4-((naphthalene-1-yloxy)methyl)-1H-1,2,3-triazoles(11Ia)
Yield: 83%; Colour: white solid; M.P 128-130^{0}C; IR (neat) (cm^{-1}) 3670, 3464, 3306, 3016, 2867, 2457, 2402, 2325, 2121, 1956, 1917, 1836, 1776, 1715, 1579, 1506, 1462, 1269, 1158, 1099, 1020.^{1}H NMR (400MHz, DMSO-*d*6): δ = 2.73(s, 2H), 2.881(s, 2H), 4.798 (s, 2H), 5.026 (s, 2H), 5.305 (s, 2H), 7.165(d, *J* = 11.6(Hz, 4H), 7.253(s, 1H), 7.509(m, 4H), 7.878(s, 3H), 7.957(s, 1H), 8.152(t, *J* = 5.6Hz, 3H). ^{13}CNMR DMSO-$d_{6,}$ 400MHz) δ= 31.231, 36.240, 44.98, 46.783, 78.843, 106.205, 106.477, 120.803, 121.161, 121.817, 122.041, 124.748, 125.185, 125.79, 126.426, 126.623, 134.511, 139.592, 142.036, 162.83, 176.692. ESI-MS: m/z527 $[M+H]^+$.

1-Propyl succinimidoanthracenyl-4-((naphthalene-1-yloxy)methyl)-1H-1,2,3-triazoles(11 I b)
Yield: 87%; Colour: white solid; M.P 100-102^{o} IR (neat) (cm^{-1}) 3463, 2944, 2579, 2500, 2144, 2052, 1712, 1578, 1363, 1223, 1094, 1031.^{1}H NMR (400MHz, DMSO-*d*6): δ = 1.344(m, 2H), 3.068(t, *J* = 6.8Hz, 2H), 3.836(t, *J* = 7.6Hz, 2H), 4.483 (t, *J* = 6.8Hz, 2H), 5.03(d, *J* = 2.4Hz, 2H), 5.364(s, 2H), 6.982(m, 2H), 7.079(d, *J* = 7.6Hz, 2H), 7.171(m, 2H), 7.254(m, 2H), 7.529(m, 2H), 7.886(t, *J* = 4.8Hz, 2H), 8.154(d, *J* = 7.6Hz, 2H), 8.175(s, 1H), 7.959(s, 1H). ^{13}CNMR DMSO-$d_{6,}$ 400MHz) δ= 31.215, 36.224, 45.040, 46.797, 56.371, 78.862, 106.483, 120.811,

121.154, 121.822, 124.718, 125.156, 125.797, 125.972, 126.418, 126.613, 126.76, 127.992, 139.773, 142.212, 162.773, 177.158.ESI-MS: m/z541 $[M+H]^+$.



Here n = 2 = a, 3 = b, 4 = c, 5 = d, 6 = e, 8 = f

Scheme 2: Synthesisof 13-(ω-azidoalkyl)-11,15-dihydro-9H-9,10-[3,4]epipyrroloanthracene-12,14(10H,13H)-dione(7 a-f)

1-Butyl succinimidoanthracenyl-4-((naphthalene-1-yloxy)methyl)-1H-1,2,3-triazoles(11 I c)
Yield: 90%; Colour: white solid; M.P 102-104^{0}C; IR (neat) (cm^{-1}) 3012, 2969, 2947, 2097, 1740, 1671, 1579, 1508,1460, 1440, 1369, 1267, 1217, 1158, 1098, 1051, 1020. ^{1}H NMR (400MHz, DMSO-*d*6): δ = 1.58(m, 2H), 1.904(m, 2H), 2.508(t, *J* = 1.6Hz, 2H), 3.372(m, 4), 4.437 (t, *J* = 6.8Hz, 2H), 5.395(s, 2H), 7.18(m, 4H), 7.496(m, 4H), 7.864(m, 4H), 7.962(s, 1H), 8.151(d, *J* = 8.4Hz, 1H), 8.371(d, *J* = 8.4Hz, 2H). ^{13}CNMR DMSO-d_6, 400MHz) δ= 25.811, 27.482, 36.203, 46.768, 50.472, 50.632, 62.284, 106.265, 120.789, 122.043, 124.659, 125.184, 125.424, 125.762, 126.592, 126.71, 126.92, 127.912, 134.532, 139.81, 154.001, 162.749, 177.129. ESI-MS: m/z555 $[M+H]^+$.

1-Pentyl succinimidoanthracenyl-4-((naphthalene-1-yloxy)methyl)-1H-1,2,3-triazoles(11I d)
Yield: 88%; Colour: white solid; M.P 110-112^{0}C; IR (neat) (cm^{-1}) 3456, 3303, 3009, 2930, 2866, 2463, 2120, 1955, 1771, 1703, 1579, 1506, 1462, 1439, 1269, 1236, 1159, 1097, 1068, 1020. ^{1}H NMR (400MHz, DMSO-*d*6): δ =1.28(m, 2H), 1.548(m, 2H), 1.877(m, 2H), 2.983(t, *J* = 6.4Hz, 2H), 3.294(t, *J* = 7.6Hz, 2H), 4.267(t, *J* = 7.2Hz, 2H), 4.385(t, *J* = 6Hz, 2H), 5.357(d, *J* = 5.2Hz, 2H), 7.174(m, 4H), 7.263(m, 3H), 7.493(m, 4H), 7.881(d, *J* = 8.4Hz, 2H), 7.962(s, 1H) 8.337(t, *J* = 8.4Hz, 2H). ^{13}CNMR DMSO-d$_6$, 400MHz) δ= 23.567, 28.088, 29.507, 45.061, 46.745, 49.641, 50.886, 62.283, 106.251, 120.789, 122.049, 124.652, 124.804, 125.201, 125.427, 125.768, 126.593, 126.703, 126.92, 127.92, 134.541, 153.998, 162.751, 177.085. ESI-MS: m/z569 $[M+H]^+$.

1-Hexyl succinimidoanthracenyl-4-((naphthalene-1-yloxy)methyl)-1H-1,2,3-triazoles(11 I e)
Yield: 92%; Colour: white solid; M.P 115-117^{0}C; IR (neat) (cm^{-1}) 3335, 3014, 2940, 2863, 2502, 2095, 1771, 1699, 1579, 1508, 1462, 1399, 1349, 1267, 1156, 1099, 1051, 1020. ^{1}H NMR (400MHz, DMSO-*d*6): δ =1.311(m, 4H), 1.506(m, 2H), 1.85(m, 2H), 2.987(t, *J* = 16.8Hz, 2H), 3.284(t, *J* = 6.8Hz, 2H), 4.383(t, *J* = 6.8Hz, 2H), 4.812(d, *J* = 8Hz, 2H), 5.365(s, 2H), 7.197(m, 4H), 7.271(m, 3H), 7.491(m, 4H), 7.877(d, *J* = 8Hz, 2H), 7.972(s, 1H) 8.182(d, *J* = 8Hz, 2H). ^{13}CNMR DMSO-d_6, 400MHz) δ= 25.863, 25.978, 28.394, 30.041, 45.128, 46.744, 49.808, 51.025, 62.327, 106.177, 120.737, 122.058, 124.603, 125.141, 125.477, 125.665, 126.528, 126.658, 126.847, 127.868, 134.562, 142.401, 154.045, 162.661, 176.982. ESI-MS: m/z583 $[M+H]^+$.

1-Octyl succinimidoanthracenyl-4-((naphthalene-1-yloxy)methyl)-1H-1,2,3-triazoles(11 I f)
Yield: 88%; Colour: white solid; M.P 90-92^{0}C; IR (neat) (cm^{-1}) 3338, 3139, 3012, 2933, 2857, 2504, 2098, 1771, 1701, 1629, 1579, 1508, 1463, 1398, 1267, 1154, 1098, 1051, 1019. ^{1}H NMR (400MHz, DMSO-*d*6): δ =1.243(m, 8H), 1.495(m, 2H), 1.817(m, 2H), 2.973(s, 2H),3.275(t, *J* = 6.4Hz, 2H), 4.376(t, *J* = 6.4Hz, 2H), 4.789(d, *J* = 16.8Hz, 2H), 5.361(s, 2H), 7.19(m, 4H), 7.268(m, 3H), 7.486(m, 4H), 7.873(d, *J* = 8Hz, 2H), 7.968(s, 1H) 8.173(d, *J* = 8Hz, 2H). ^{13}CNMR DMSO-d_6, 400MHz) δ= 26.251, 26.528, 28.692, 28.895, 30.170, 45.142, 46.754, 49.89, 51.106, 62.305, 106.162, 120.746, 122.066, 124.607, 125.139, 125.478, 125.66, 126.535, 126.658, 126.849, 127.876, 134.56, 139.761, 142.40, 154.053, 176.984. ESI-MS: m/z611 $[M+H]^+$.

1-Ethyl succinimidoanthracenyl-4-((4-methoxynaphthalene-1-yloxy)methyl)-1H-1,2,3-triazoles(11 II a)
Yield: 85%; Colour: white solid; M.P 98-100^{0}C; IR (neat) (cm^{-1}) 3464, 3072, 3009, 2957, 2465, 2105, 1955, 1775, 1708, 1595, 1463, 1434, 1390, 1340, 1272, 1238, 1159, 1136, 1096, 1052, 1024. ^{1}H NMR (400MHz, DMSO-*d*6): δ =2.73(s, 2H), 2.886(s, 3H), 3.267 (s, 2H), 3.916 (s, 2H), 4.787 (s, 2H), 5.224(s, 2H), 6.868(d, *J* = 7.2Hz, 2H), 7.063(d, *J* = 7.2Hz, 2H), 7.161(t, *J* = 12Hz, 4H), 7.524(d, *J* = 24Hz, 4H), 7.952(s, 1H) 8.099(t, *J* = 14.8Hz, 2H). ^{13}CNMR DMSO-d_6, 400MHz) δ= 31.246, 36.261, 44.961, 46.767, 56.048, 62.319, 104.194, 106.141, 124.741, 125.179, 126.404, 127.059, 139.587, 142.24, 142.035, 162.861, 176.706. ESI-MS: m/z557 [M+H]$^+$.

1-Propyl succinimidoanthracenyl-4-((4-methoxynaphthalene-1-yloxy)methyl)-1H-1,2,3-triazoles(11 II b)
Yield: 88%; Colour: white solid; M.P 96-98^{0}C; IR (neat) (cm^{-1}) 3670, 3456, 3015, 2958, 2402, 1956, 1772, 1703, 1672, 1630, 1595, 1463, 1439 , 1386, 1271, 1217, 1159, 1139, 1097, 1051, 1023, 1000. ^{1}H NMR (400MHz, DMSO-*d*6): δ =1.391(m, 2H), 3.061(t, *J* = 6.8Hz, 2H), 3.825(t, *J* = 7.2Hz, 2H), 3.926 (s, 3H), 4.463(t, *J* = 6.8Hz, 2H), 4.79(s, 2H), 5.289(s, 2H), 6.89(d, *J* = 8.8Hz, 2H), 6.969(m, 4H), 7.164(m, 4H), 7.468(m, 2H), 7.958(s, 1H) 8.123(m, 2H). ^{13}CNMR DMSO-d_6, 400MHz) δ= 27.751, 35.364, 36.24, 45.016, 46.783, 56.065, 62.465, 104.216, 106.285, 121.89, 124.716, 125.15, 126.761, 126.922, 139.769, 142.219, 149.442, 177.152. ESI-MS: m/z571 [M+H]$^+$.

1-Butyl succinimidoanthracenyl-4-((4-methoxynaphthalene-1-yloxy)methyl)-1H-1,2,3-triazoles(11 II c)
Yield: 86%; Colour: white solid; M.P 100-102^{0}C; IR (neat) (cm^{-1}) 3453,3140,3072, 3004, 2940, 2870,2499, 2097, 1955, 1919, 1880, 1771, 1674, 1595, 1463, 1387, 1271, 1240, 1159, 1131, 1096, 1053, 1023. ^{1}H NMR (400MHz, DMSO-*d*6): δ = 1.498(m, 2H), 1.895(m, 2H), 3.064(t, *J* = 6.4Hz, 2H), 3.33(t, *J* = 7.6Hz, 2H), 3.926 (s, 3H), 4.429(t, *J* = 6.8Hz, 2H), 4.782(s, 2H), 5.277(s, 2H), 6.877(d, *J* = 8.4Hz, 2H), 7.156(m, 4H), 7.25(m, 2H), 7.463(m, 4H), 7.959(s, 1H) 8.117(m,2H). ^{13}CNMR DMSO-d_6, 400MHz) δ= 26.04, 31.201, 36.216, 45.003, 46.744, 50.624, 56.026, 62.584, 104.172, 121.866, 122.02, 124.666, 125.172, 126.708, 126.915, 139.803, 142.394, 162.756, 177.137. ESI-MS: m/z585 [M+H]$^+$.

1-Pentyl succinimidoanthracenyl-4-((4-methoxynaphthalene-1-yloxy)methyl)-1H-1,2,3-triazoles(11 II d)
Yield: 90%; Colour: white solid; M.P 103-105^{0}C; IR (neat) (cm^{-1}) 3014, 2945, 2098, 1741, 1628, 1595, 1462, 1373, 1271, 1217, 1157, 1097, 1051, 1024. ^{1}H NMR (400MHz, DMSO-*d*6): δ =1.273(m, 2H), 1.564(m, 2H), 1.868(m, 2H), 2.989(t, *J* = 5.2Hz, 2H), 3.177(t, *J* = 6.8Hz, 2H), 3.918(s, 3H), 4.376(t, *J* = 5.6Hz, 2H), 4.786(s, 2H), 5.286(d,, *J* = 6Hz, 2H), 6.849(d, *J* = 2.8Hz, 2H), 7.147(m, 4H), 7.264(m, 2H), 7.455(m, 4H), 7.963(s, 1H) 8.124(m,2H). ^{13}CNMR DMSO-d_6, 400MHz) δ= 23.559, 28.088, 28.24, 45.06, 46.739, 50.886, 50.953, 55.985, 62.595, 104.119, 121.883, 122.044, 124.646, 125.183, 126.016, 126.693, 139.806, 147.855, 149.449, 177.069. ESI-MS: m/z599 [M+H]$^+$.

1-Hexyl succinimidoanthracenyl-4-((4-methoxynaphthalene-1-yloxy)methyl)-1H-1,2,3-triazoles(11 II e)
Yield: 92%; Colour: white solid; M.P 105-107^{0}C; IR (neat) (cm^{-1}) 3666, 3453, 3336, 3144, 3013, 2939, 2862, 2510, 2091, 1950, 1914, 1876, 1837, 1771, 1700, 1629, 1595, 1463, 1382, 1349, 1271, 1240, 1157, 1097, 1051, 1023, 1001. ^{1}H NMR (400MHz, DMSO-*d*6): δ =1.329(m, 4H), 1.53(m, 2H), 1.835(m, 2H), 2.508(t, *J* = 1.6Hz, 2H), 2.989(t, *J* = 6Hz, 2H), 3.926(s, 3H), 4.381(t, *J* = 7.2Hz, 2H), 4.776(s, 2H), 5.29(d,, *J* = 6.4Hz, 2H), 6.874(d, *J* = 8.4Hz, 2H), 7.159(m, 4H), 7.255(m, 2H), 7.464(m, 4H), 7.96(s, 1H) 8.12(m,2H). ^{13}CNMR DMSO-d_6, 400MHz) δ= 25.964, 26.134, 28.568, 30.014, 45.03, 46.714, 49.758, 50.996, 56.02, 62.597, 104.158, 106.251, 121.861, 124.645, 125.155, 126.688, 126.849, 139.791, 142.422, 149.444, 177.049. ESI-MS: m/z613 [M+H]$^+$.

1-Octyl succinimidoanthracenyl-4-((4-methoxynaphthalene-1-yloxy)methyl)-1H-1,2,3-triazoles(11 II f)
Yield: 87%; Colour: white solid; M.P 102-104^{0}C; IR (neat) (cm^{-1}) 3337, 3013, 2934, 2858, 2495, 2095, 1772, 1700, 1631, 1595, 1462, 1394, 1350, 1272, 1240, 1155, 1097, 1050, 1024. ^{1}H NMR (400MHz, DMSO-*d*6): δ =1.284(m, 8H), 1.521(m, 2H), 1.824(m, 2H), 2.736(t, *J* = 6Hz, 2H), 2.975(t, *J* = 5.6Hz, 2H), 3.917(s, 3H), 4.375(t, *J* = 7.2Hz, 2H), 4.772(s, 2H), 5.271(s, 2H), 6.873(d, *J* = 3.6Hz, 2H), 7.158(m, 4H), 7.249(m, 2H), 7.463(m, 4H), 7.959(s, 1H) 8.097(m,2H). ^{13}CNMR DMSO-d_6, 400MHz) δ= 26.089, 26.20, 27.102, 28.662, 30.115, 37.983, 45.025, 46.703, 51.069, 56.035, 62.576, 104.173, 121.861, 122.022, 124.652, 125.15, 126.330, 126.693, 126.841, 139.762, 142.42, 177.056.ESI-MS: m/z641 [M+H]$^+$.

RESULTS AND DISCUSSION

The present investigation focuses on the developmentof a fewnaphtholsandtriazolosuccinimidoanthracenylstarting from 1-naphthol. The synthetic chemistry employed to prepare the target compounds is outlined in **scheme 1**. Regioselective synthesis of 1, 2, 3-triazoleinvolves three steps: (1) Propargylation of naphthol, (2) Synthesis of alkyl azides**(scheme 2**) and (3) Click reaction of propargylatednaphthols with azides (**scheme 1**).

CONCLUSION

Synthesis of few 1-alkyl succinimidoanthracenyl-4-((naphthalene-1-yloxy)methyl)-1H-1,2,3-triazolesis reported. The structure of these triazoles was established by spectral studies. In this chapter we have successfully demonstrated a simple and convenient route for the synthesis of 1, 2, 3-triazole substituted anthracene by using the Cu (I) catalyzed [2+3] dipolar cycloaddition reaction. In addition to its simplicity and mild reaction conditions, this method provides a wide range of triazoles in good yield in a single step operation. These products are under investigation for their biological activities.

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