Identification of studies via databases

Identification

Studies identified from:
    PubMed (n=763)
    Scopus (n=722)
    Science Direct (n=546)

Total (n=2031)

Records removed before screening :
Duplicate records removed :67

Screening

Studies screened by title and abstract:
(n =1964)

Studies excluded
(n =1953)

Studies sought for retrieval
(n = 11)

Studies not retrieved
(n =0)

Studies assessed for eligibility
(n =11)

Studies excluded:(n=6)
Review paper (n =2)
Did not meet our criteria (n=4)

Included

Studies included in qualitative and quantitative synthesis
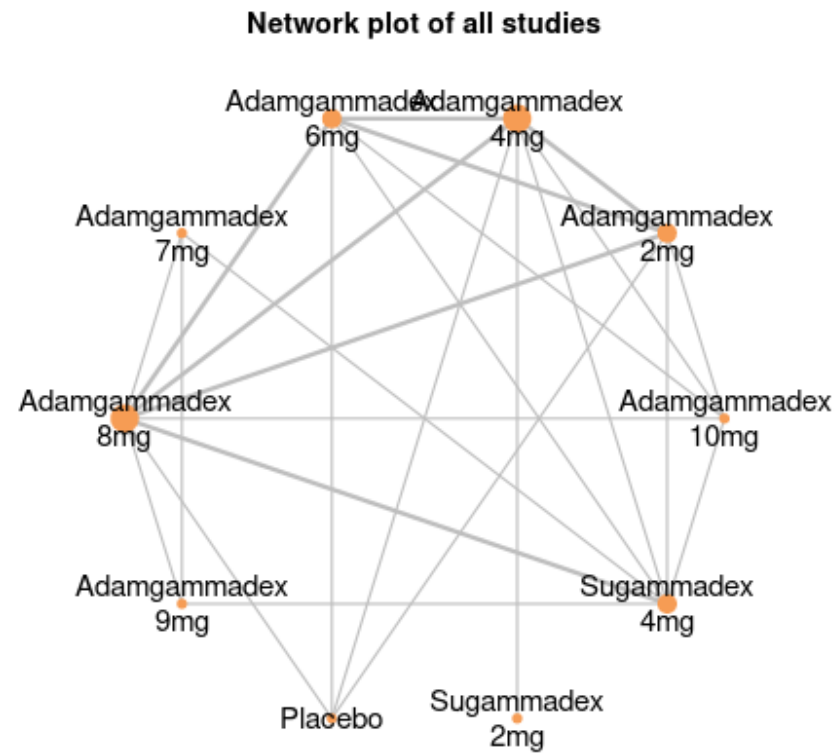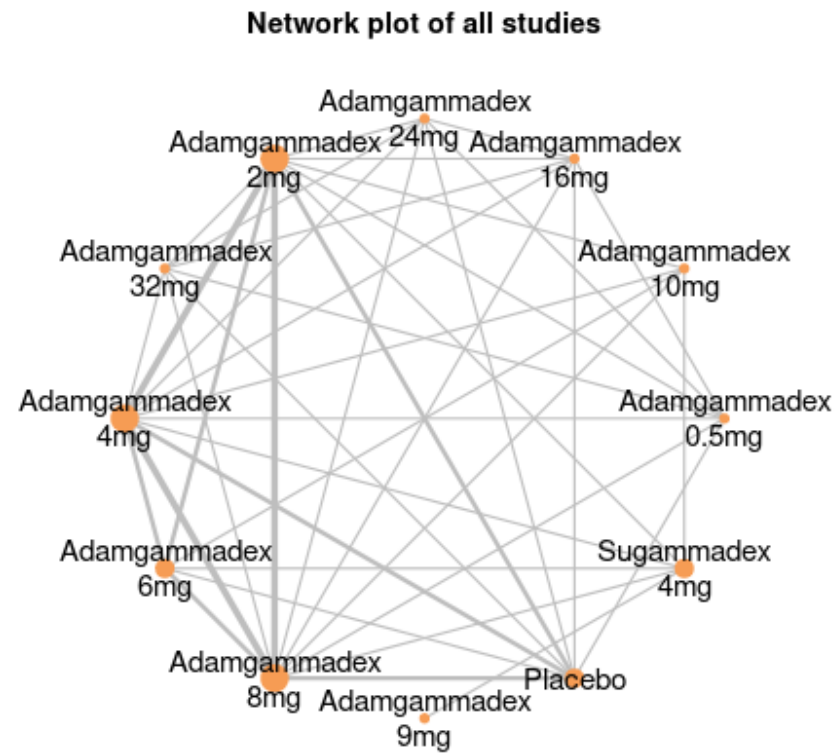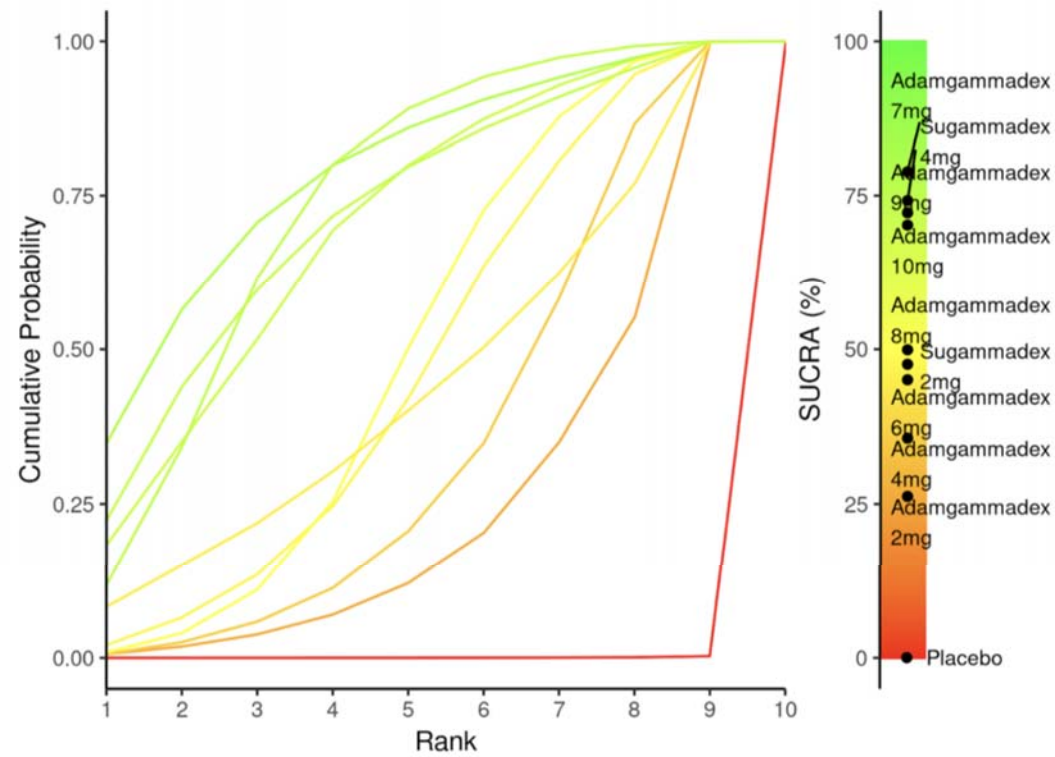(n =5)

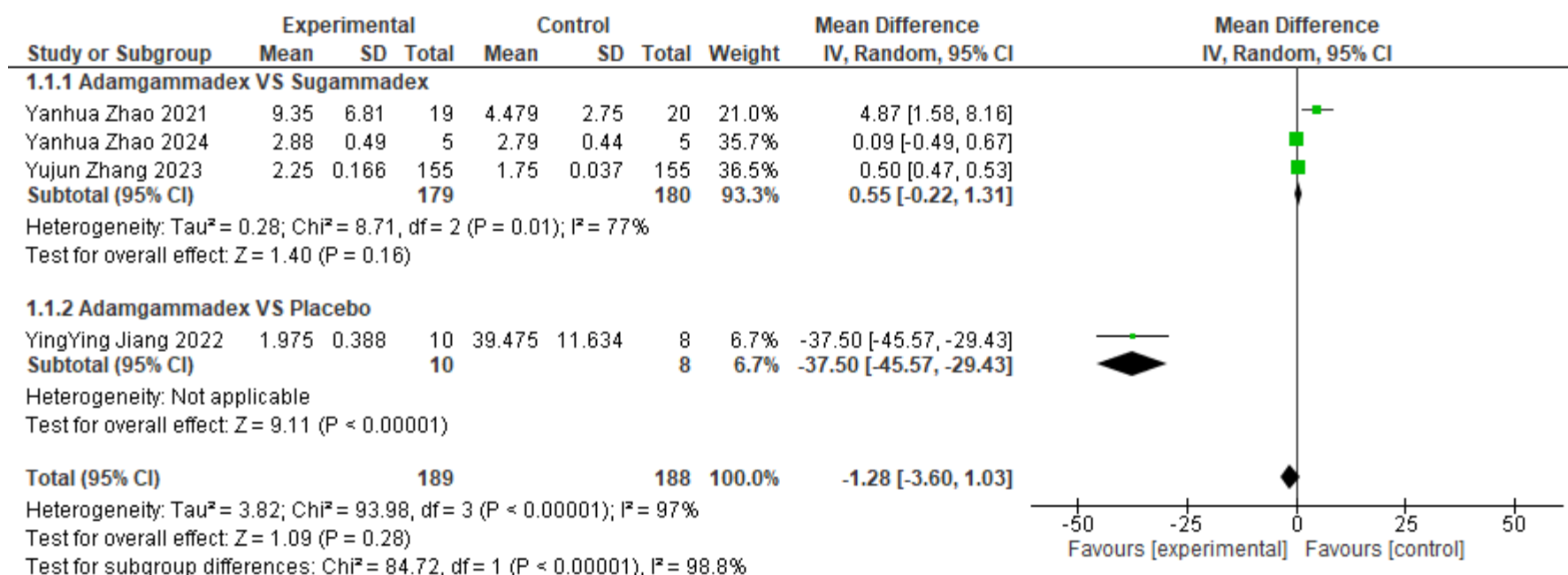**Supplementary Figure 1.** Prisma.

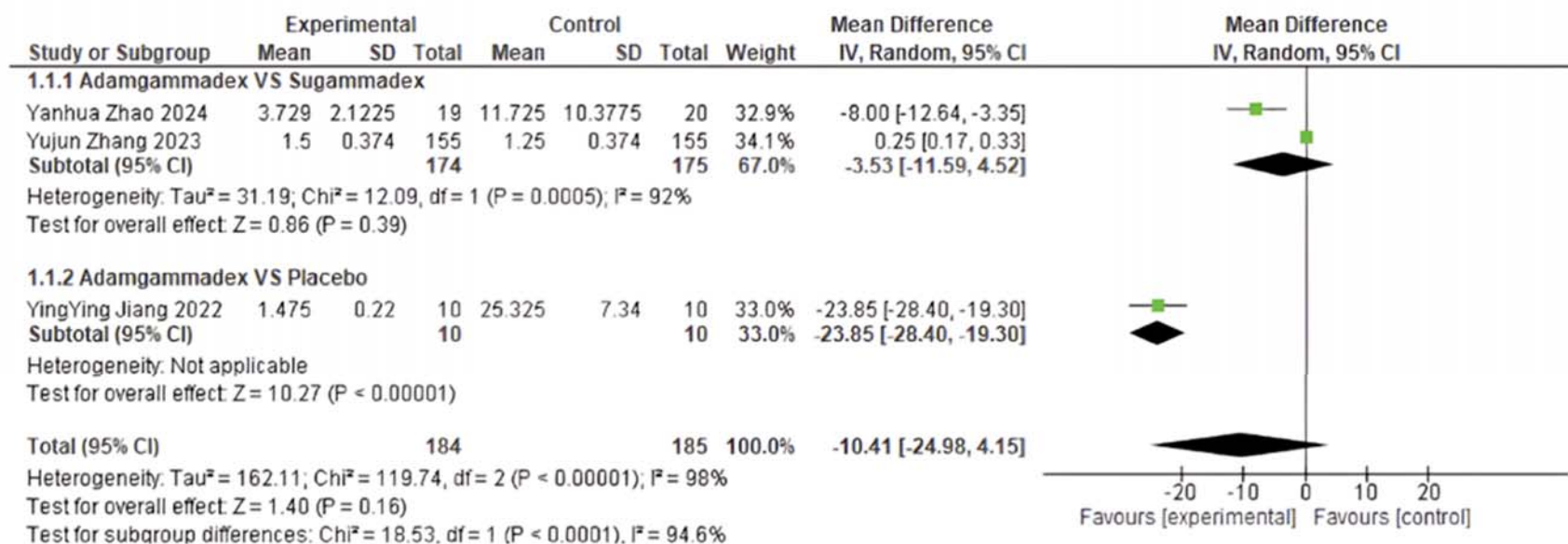**Supplementary Figure 2.** Network plot of all studies reporting ToF 0.9.

Supplementary Figure 3. Network plot of all studies reporting Adverse events.
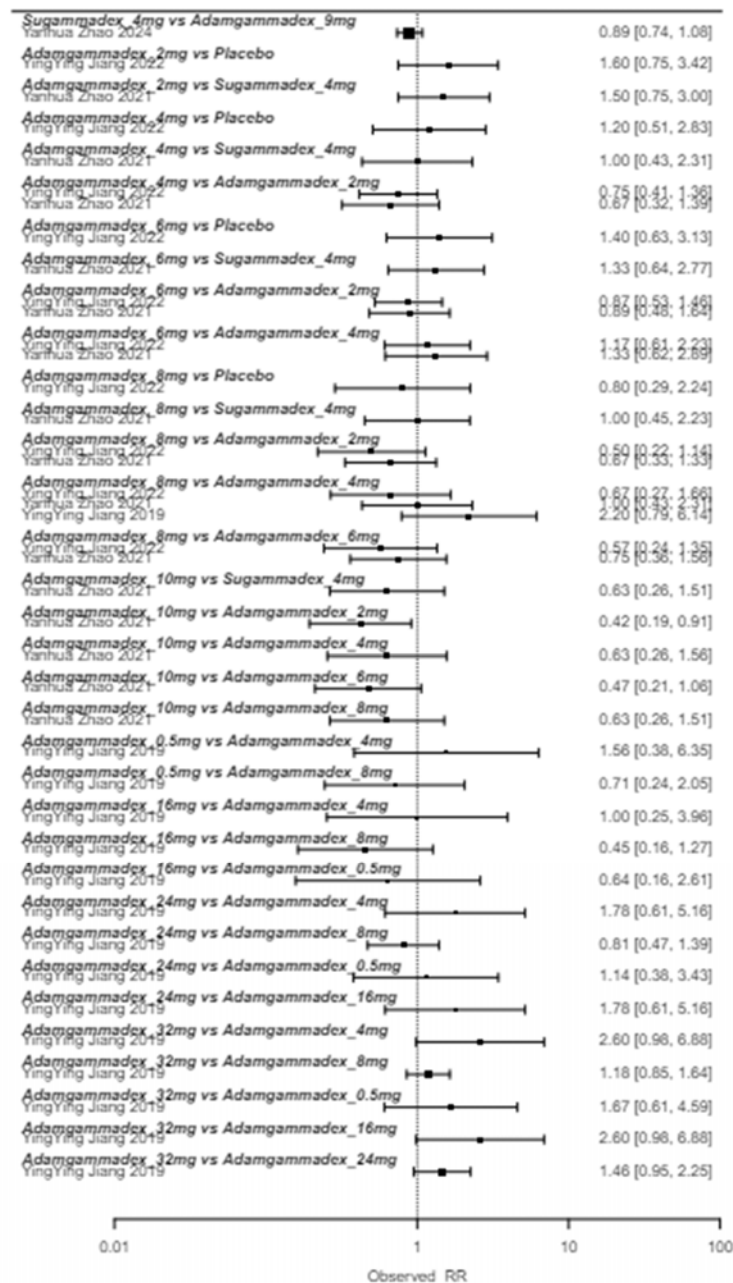
Supplementary Figure 4. Cumulative ranking of ToF 0.9.

Study or Subgroup	Experimental Mean	SD	Total	Control Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
1.1.1 Adamgammadex VS Sugammadex								
Yanhua Zhao 2021	9.35	6.81	19	4.479	2.75	20	21.0%	4.87 [1.58, 8.16]
Yanhua Zhao 2024	2.88	0.49	5	2.79	0.44	5	35.7%	0.09 [-0.49, 0.67]
Yujun Zhang 2023	2.25	0.166	155	1.75	0.037	155	36.5%	0.50 [0.47, 0.53]
Subtotal (95% CI)			179			180	93.3%	0.55 [-0.22, 1.31]

Heterogeneity: Tau² = 0.28; Chi² = 8.71, df = 2 (P = 0.01); I² = 77%
Test for overall effect: Z = 1.40 (P = 0.16)

Study or Subgroup	Experimental Mean	SD	Total	Control Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
1.1.2 Adamgammadex VS Placebo								
YingYing Jiang 2022	1.975	0.388	10	39.475	11.634	8	6.7%	-37.50 [-45.57, -29.43]
Subtotal (95% CI)			10			8	6.7%	-37.50 [-45.57, -29.43]

Heterogeneity: Not applicable
Test for overall effect: Z = 9.11 (P < 0.00001)

| **Total (95% CI)** | | | 189 | | | 188 | 100.0% | -1.28 [-3.60, 1.03] |

Heterogeneity: Tau² = 3.82; Chi² = 93.98, df = 3 (P < 0.00001); I² = 97%
Test for overall effect: Z = 1.09 (P = 0.28)
Test for subgroup differences: Chi² = 84.72, df = 1 (P < 0.00001), I² = 98.8%

Supplementary Figure 5. Direct pairwise meta-analysis of ToF 0.9.

Study or Subgroup	Experimental Mean	SD	Total	Control Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
1.1.1 Adamgammadex VS Sugammadex								
Yanhua Zhao 2024	3.729	2.1225	19	11.725	10.3775	20	32.9%	-8.00 [-12.64, -3.35]
Yujun Zhang 2023	1.5	0.374	155	1.25	0.374	155	34.1%	0.25 [0.17, 0.33]
Subtotal (95% CI)			174			175	67.0%	-3.53 [-11.59, 4.52]

Heterogeneity: Tau² = 31.19; Chi² = 12.09, df = 1 (P = 0.0005); I² = 92%
Test for overall effect: Z = 0.86 (P = 0.39)

Study or Subgroup	Experimental Mean	SD	Total	Control Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
1.1.2 Adamgammadex VS Placebo								
YingYing Jiang 2022	1.475	0.22	10	25.325	7.34	10	33.0%	-23.85 [-28.40, -19.30]
Subtotal (95% CI)			10			10	33.0%	-23.85 [-28.40, -19.30]

Heterogeneity: Not applicable
Test for overall effect: Z = 10.27 (P < 0.00001)

Total (95% CI)			184			185	100.0%	-10.41 [-24.98, 4.15]

Heterogeneity: Tau² = 162.11; Chi² = 119.74, df = 2 (P < 0.00001); I² = 98%
Test for overall effect: Z = 1.40 (P = 0.16)
Test for subgroup differences: Chi² = 18.53, df = 1 (P < 0.0001), I² = 94.6%

Favours [experimental] Favours [control]

Supplementary Figure 6. Forest plot of ToF 0.7.

Comparison	Study	RR [95% CI]
Sugammadex_4mg vs Adamgammadex_9mg	Yanhua Zhao 2024	0.89 [0.74, 1.08]
Adamgammadex_2mg vs Placebo	YingYing Jiang 2022	1.60 [0.75, 3.42]
Adamgammadex_2mg vs Sugammadex_4mg	Yanhua Zhao 2021	1.50 [0.75, 3.00]
Adamgammadex_4mg vs Placebo	YingYing Jiang 2022	1.20 [0.51, 2.83]
Adamgammadex_4mg vs Sugammadex_4mg	Yanhua Zhao 2021	1.00 [0.43, 2.31]
Adamgammadex_4mg vs Adamgammadex_2mg	YingYing Jiang 2022	0.75 [0.41, 1.36]
	Yanhua Zhao 2021	0.67 [0.32, 1.39]
Adamgammadex_6mg vs Placebo	YingYing Jiang 2022	1.40 [0.63, 3.13]
Adamgammadex_6mg vs Sugammadex_4mg	Yanhua Zhao 2021	1.33 [0.64, 2.77]
Adamgammadex_6mg vs Adamgammadex_2mg	YingYing Jiang 2022	0.87 [0.53, 1.45]
	Yanhua Zhao 2021	0.89 [0.48, 1.64]
Adamgammadex_6mg vs Adamgammadex_4mg	YingYing Jiang 2022	1.17 [0.61, 2.23]
	Yanhua Zhao 2021	1.33 [0.62, 2.89]
Adamgammadex_8mg vs Placebo	YingYing Jiang 2022	0.80 [0.29, 2.24]
Adamgammadex_8mg vs Sugammadex_4mg	Yanhua Zhao 2021	1.00 [0.45, 2.23]
Adamgammadex_8mg vs Adamgammadex_2mg	YingYing Jiang 2022	0.50 [0.22, 1.14]
	Yanhua Zhao 2021	0.67 [0.33, 1.33]
Adamgammadex_8mg vs Adamgammadex_4mg	YingYing Jiang 2022	0.67 [0.27, 1.66]
	Yanhua Zhao 2021	1.00 [0.43, 2.31]
	YingYing Jiang 2019	2.20 [0.79, 6.14]
Adamgammadex_8mg vs Adamgammadex_6mg	YingYing Jiang 2022	0.57 [0.24, 1.35]
	Yanhua Zhao 2021	0.75 [0.36, 1.56]
Adamgammadex_10mg vs Sugammadex_4mg	Yanhua Zhao 2021	0.63 [0.26, 1.51]
Adamgammadex_10mg vs Adamgammadex_2mg	Yanhua Zhao 2021	0.42 [0.19, 0.91]
Adamgammadex_10mg vs Adamgammadex_4mg	Yanhua Zhao 2021	0.63 [0.26, 1.56]
Adamgammadex_10mg vs Adamgammadex_6mg	Yanhua Zhao 2021	0.47 [0.21, 1.06]
Adamgammadex_10mg vs Adamgammadex_8mg	Yanhua Zhao 2021	0.63 [0.26, 1.51]
Adamgammadex_0.5mg vs Adamgammadex_4mg	YingYing Jiang 2019	1.56 [0.38, 6.35]
Adamgammadex_0.5mg vs Adamgammadex_8mg	YingYing Jiang 2019	0.71 [0.24, 2.05]
Adamgammadex_16mg vs Adamgammadex_4mg	YingYing Jiang 2019	1.00 [0.25, 3.96]
Adamgammadex_16mg vs Adamgammadex_8mg	YingYing Jiang 2019	0.45 [0.16, 1.27]
Adamgammadex_16mg vs Adamgammadex_0.5mg	YingYing Jiang 2019	0.64 [0.16, 2.61]
Adamgammadex_24mg vs Adamgammadex_4mg	YingYing Jiang 2019	1.78 [0.61, 5.16]
Adamgammadex_24mg vs Adamgammadex_8mg	YingYing Jiang 2019	0.81 [0.47, 1.39]
Adamgammadex_24mg vs Adamgammadex_0.5mg	YingYing Jiang 2019	1.14 [0.38, 3.43]
Adamgammadex_24mg vs Adamgammadex_16mg	YingYing Jiang 2019	1.78 [0.61, 5.16]
Adamgammadex_32mg vs Adamgammadex_4mg	YingYing Jiang 2019	2.60 [0.98, 6.88]
Adamgammadex_32mg vs Adamgammadex_8mg	YingYing Jiang 2019	1.18 [0.85, 1.64]
Adamgammadex_32mg vs Adamgammadex_0.5mg	YingYing Jiang 2019	1.67 [0.61, 4.59]
Adamgammadex_32mg vs Adamgammadex_16mg	YingYing Jiang 2019	2.60 [0.98, 6.88]
Adamgammadex_32mg vs Adamgammadex_24mg	YingYing Jiang 2019	1.46 [0.95, 2.25]

Observed RR

Supplementary Figure 7. Individual study results for adverse events.

Study or Subgroup	Experimental Events	Total	Control Events	Total	Weight	Risk Ratio M-H, Random, 95% CI
1.2.1 Adamgammadex VS Sugammadex						
Yanhua Zhao 2024	1	19	1	20	2.5%	1.05 [0.07, 15.66]
YingYing Jiang 2019	5	6	8	12	63.1%	1.25 [0.73, 2.14]
YingYing Jiang 2022	4	10	4	8	17.2%	0.80 [0.29, 2.24]
Subtotal (95% CI)		35		40	82.8%	1.13 [0.71, 1.81]
Total events	10		13			
Heterogeneity: Tau² = 0.00; Chi² = 0.68, df = 2 (P = 0.71); I² = 0%						
Test for overall effect: Z = 0.52 (P = 0.60)						
1.2.2 Adamgammadex VS Placebo						
YingYing Jiang 2022	4	10	4	8	17.2%	0.80 [0.29, 2.24]
Subtotal (95% CI)		10		8	17.2%	0.80 [0.29, 2.24]
Total events	4		4			
Heterogeneity: Not applicable						
Test for overall effect: Z = 0.43 (P = 0.67)						
Total (95% CI)		45		48	100.0%	1.07 [0.70, 1.63]
Total events	14		17			
Heterogeneity: Tau² = 0.00; Chi² = 1.11, df = 3 (P = 0.77); I² = 0%						
Test for overall effect: Z = 0.30 (P = 0.76)						
Test for subgroup differences: Chi² = 0.37, df = 1 (P = 0.55), I² = 0%						

Supplementary Figure 8. Direct pairwise meta analysis adverse events.

Supplementary Table 1. Summary characteristics of all studies reporting ToF 0.9.

Characteristics table of all studies

Characteristic	Value
Number of Interventions	10
Number of Studies	4
Total Number of Patients in Network	464
Total Possible Pairwise Comparisons	45
Total Number of Pairwise Comparisons With Direct Data	25
Is the network connected?	TRUE
Number of Two-arm Studies	1
Number of Multi-Arms Studies	3
Average Outcome	3.498

Supplementary Table 2. Ranking Tof 0.9.

Adamgammadex_7mg	0.06 [-2.39; 2.52]	.	-0.68 [-3.22; 1.86]	-4.81 [-8.54; -1.07]		.	.	.	.
-0.75 [-3.09; 1.59]	Sugammadex_4mg	0.44 [-1.61; 2.49]	-0.75 [-3.36; 1.87]	-1.10 [-2.84; 0.64]		-0.88 [-2.89; 1.13]	-5.32 [-11.64; 1.00]	-10.52 [-21.32; 0.28]	.
-0.80 [-3.75; 2.16]	-0.04 [-2.04; 1.95]	Adamgammadex_10mg	.	-0.53 [-2.59; 1.53]		-1.32 [-3.42; 0.78]	-5.76 [-12.11; 0.59]	-10.96 [-21.77; -0.15]	
-0.68 [-3.22; 1.86]	0.07 [-2.43; 2.57]	0.11 [-2.98; 3.20]	Adamgammadex_9mg	-4.12 [-7.97; -0.28]		.	.	.	.
-1.97 [-4.61; 0.66]	-1.22 [-2.86; 0.42]	-1.18 [-3.07; 0.72]	-1.29 [-4.07; 1.49]	Adamgammadex_8mg	.	-0.59 [-1.98; 0.81]	-0.70 [-2.54; 1.15]	-1.40 [-3.35; 0.54]	-37.50 [-45.78; -29.22]
-2.09 [-5.68; 1.50]	-1.34 [-4.25; 1.57]	-1.29 [-4.33; 1.74]	-1.41 [-5.11; 2.29]	-0.12 [-2.69; 2.45]	Sugammadex_2mg	.	-0.50 [-2.37; 1.37]	.	.
-2.33 [-5.10; 0.45]	-1.57 [-3.33; 0.19]	-1.53 [-3.48; 0.42]	-1.64 [-4.56; 1.27]	-0.35 [-1.73; 1.03]	-0.24 [-2.82; 2.35]	Adamgammadex_6mg	-0.27 [-2.15; 1.60]	-1.00 [-2.97; 0.98]	-37.10 [-45.39; -28.81]
-2.59 [-5.65; 0.47]	-1.84 [-4.06; 0.38]	-1.79 [-4.19; 0.60]	-1.91 [-5.10; 1.28]	-0.62 [-2.37; 1.14]	-0.50 [-2.37; 1.37]	-0.26 [-2.04; 1.51]	Adamgammadex_4mg	-0.94 [-2.91; 1.04]	-37.23 [-45.51; -28.94]
-3.37 [-6.49; -0.25]	-2.62 [-4.92; -0.32]	-2.57 [-5.04; -0.11]	-2.69 [-5.93; 0.55]	-1.40 [-3.24; 0.44]	-1.28 [-4.00; 1.44]	-1.04 [-2.90; 0.81]	-0.78 [-2.75; 1.19]	Adamgammadex_2mg	-36.40 [-44.70; -28.10]
-39.62 [-48.24; -30.99]	-38.86 [-47.23; -30.50]	-38.82 [-47.23; -30.40]	-38.93 [-47.61; -30.26]	-37.64 [-45.90; -29.39]	-37.53 [-46.02; -29.04]	-37.29 [-45.55; -29.03]	-37.03 [-45.31; -28.75]	-36.25 [-44.54; -27.95]	Placebo

Supplementary Table 3. Ranking Adverse events.

Adamgammadex_16mg	.	0.64 [0.16; 2.61]	0.56 [0.19; 1.63]	1.00 [0.25; 3.96]	.	.	0.45 [0.16; 1.27]	.	.	0.38 [0.15; 1.02]	.
0.80 [0.22; 2.90]	Adamgammadex_10mg	.	.	0.63 [0.26; 1.56]	.	0.63 [0.26; 1.51]	0.63 [0.26; 1.51]	.	0.47 [0.21; 1.06]	.	0.42 [0.19; 0.91]
0.64 [0.16; 2.61]	0.80 [0.21; 2.96]	Adamgammadex_0.5mg	0.88 [0.29; 2.64]	1.56 [0.38; 6.35]	.	.	0.71 [0.24; 2.05]	.	.	0.60 [0.22; 1.65]	.
0.56 [0.19; 1.63]	0.70 [0.27; 1.79]	0.88 [0.29; 2.64]	Adamgammadex_24mg	1.78 [0.61; 5.16]	.	.	0.81 [0.47; 1.39]	.	.	0.68 [0.44; 1.05]	.
0.53 [0.17; 1.61]	0.65 [0.30; 1.43]	0.82 [0.26; 2.61]	0.93 [0.46; 1.90]	Adamgammadex_4mg	1.20 [0.51; 2.83]	1.00 [0.43; 2.31]	0.93 [0.55; 1.58]	.	0.81 [0.49; 1.33]	0.38 [0.15; 1.02]	0.72 [0.45; 1.14]
0.54 [0.15; 2.00]	0.67 [0.24; 1.85]	0.84 [0.22; 3.21]	0.96 [0.36; 2.55]	1.03 [0.46; 2.29]	Placebo	.	1.25 [0.45; 3.49]	.	0.71 [0.32; 1.59]	.	0.62 [0.29; 1.34]
0.51 [0.15; 1.75]	0.63 [0.26; 1.51]	0.79 [0.22; 2.81]	0.90 [0.38; 2.17]	0.97 [0.48; 1.95]	0.94 [0.36; 2.43]	Sugammadex_4mg	1.00 [0.45; 2.23]	0.89 [0.74; 1.08]	0.75 [0.36; 1.56]	.	0.67 [0.33; 1.33]
0.49 [0.18; 1.36]	0.61 [0.27; 1.35]	0.76 [0.26; 2.20]	0.87 [0.51; 1.49]	0.93 [0.55; 1.57]	0.90 [0.39; 2.08]	0.96 [0.47; 1.97]	Adamgammadex_8mg	.	0.67 [0.38; 1.17]	0.85 [0.61; 1.17]	0.59 [0.35; 1.00]
0.45 [0.13; 1.58]	0.56 [0.23; 1.37]	0.71 [0.20; 2.55]	0.81 [0.33; 1.98]	0.86 [0.42; 1.79]	0.84 [0.32; 2.21]	0.89 [0.74; 1.08]	0.93 [0.44; 1.94]	Adamgammadex_9mg	.	.	.
0.38 [0.12; 1.19]	0.48 [0.23; 1.01]	0.60 [0.19; 1.93]	0.68 [0.33; 1.41]	0.73 [0.45; 1.18]	0.71 [0.33; 1.53]	0.76 [0.39; 1.48]	0.79 [0.47; 1.32]	0.85 [0.42; 1.70]	Adamgammadex_6mg	.	0.88 [0.60; 1.30]
0.38 [0.15; 1.02]	0.48 [0.21; 1.10]	0.60 [0.22; 1.65]	0.68 [0.44; 1.05]	0.73 [0.42; 1.28]	0.71 [0.30; 1.70]	0.76 [0.35; 1.62]	0.79 [0.57; 1.08]	0.85 [0.39; 1.86]	1.00 [0.56; 1.79]	Adamgammadex_32mg	.
0.34 [0.11; 1.04]	0.42 [0.20; 0.88]	0.53 [0.17; 1.67]	0.60 [0.30; 1.22]	0.64 [0.41; 1.00]	0.63 [0.30; 1.32]	0.67 [0.35; 1.28]	0.69 [0.42; 1.13]	0.75 [0.38; 1.47]	0.88 [0.60; 1.30]	0.88 [0.50; 1.53]	Adamgammadex_2mg