

Supplementary Methods S1. Full Search Strategies

All databases were searched from inception to April 14, 2025 (search date: April 14, 2025), with no restrictions on publication year or language.

S1-1. Ovid-MEDLINE (1946 to present)

No.	Search terms	Results
Population (P)		
1	exp Infertility/ or exp Infertility, Female/	77,415
2	(infertil* or subfertil* or steril*).mp.	234,516
3	exp Abortion, Spontaneous/	40,733
4	("miscarriage*" or "pregnancy loss" or "implantation failure*").mp.	29,957
5	((pregnancy adj3 loss) or (implantation adj3 failure*)).mp.	14,283
6	or/1-5	290,220
7	exp Fertilization in Vitro/	43,368
8	exp Embryo Transfer/	19,659
9	exp Sperm Injections, Intracytoplasmic/	8,453
10	exp Reproductive Techniques, Assisted/	85,017
11	exp Insemination, Artificial/	12,849
12	(in vitro fertil* or intra?cytoplasmic sperm*).ti,ab.	36,264
13	(IVF or ICSI or ART or RIF or RPL or RSA).tw.	231,271
14	("artificial insemination" or "intrauterine insemination" or "assisted reproducti*").ti,ab.	32,249
15	or/7-14	300,154
16	6 or 15	546,545
Intervention (I)		
17	exp Fat Emulsions, Intravenous/	4,352
18	(intralipid* or ivelip*).mp.	3,114
19	((fat adj3 emulsion* adj3 intravenous) or (IV adj3 lipid adj3 emulsion*) or "lipid Emulsions").mp.	5,290
20	("intravenous lipid emulsion" or "parenteral lipid emulsion" or "fat emulsion therapy" or intrafat* or travamulsion or "Liposyn III").ti,ab.	602
21	(LCT* or linolenic* or linoleic* or lipidem* or lipoplus* or liposyn* or lipovenoes* or lipofundin*).tw.	37,548
22	("Soybean oil, phospholipid emulsion" or "Soybean Phospholipids" or "Lipid Emulsion").mp.	3,237
23	((oil adj3 emulsion*) or (soybean adj3 oil adj3 emulsion*) or (soy adj3 lipid adj3 emulsion*) or (soy adj3 oil adj3 infusion*) or (soy adj3 based adj3 lipid adj3 emulsion*) or (soybean adj3 IV adj3 lipid adj3 emulsion*)).ti,ab.	9,765
24	or/17-23	54,262
P and I / Filters		
25	16 and 24	567
26	Animals/ not Human/	5,292,275
27	25 not 26	398

S1-2. Ovid-EMBASE (1974 to April 11, 2025)

No.	Search terms	Results
Population (P)		
1	exp Infertility/ or exp Infertility, Female/	156,602
2	(infertil* or subfertil* or steril*).mp.	328,309
3	exp Abortion, Spontaneous/	68,592
4	("miscarriage*" or "pregnancy loss" or "implantation failure*").mp.	50,225
5	((pregnancy adj3 loss) or (implantation adj3 failure*)).mp.	23,767
6	or/1-5	421,454
7	exp in vitro fertilization/	125,420
8	exp embryo transfer/	44,598
9	exp intracytoplasmic sperm injection/	30,141
10	exp infertility therapy/	176,146
11	exp artificial insemination/	22,566
12	(in vitro fertil* or intra?cytoplasmic sperm*).ti,ab,kw.	53,023
13	(IVF or ICSI or ART or RIF or RPL or RSA).tw.	303,070
14	("artificial insemination" or "intrauterine insemination" or "assisted reproducti*").ti,ab,kw.	48,809
15	or/7-14	424,034
16	6 or 15	744,169
Intervention (I)		
17	exp lipid emulsion/ or exp intralipid/	11,552
18	(intralipid* or ivelip*).mp.	6,314
19	((fat adj3 emulsion* adj3 intravenous) or (IV adj3 lipid adj3 emulsion*) or "lipid Emulsions").mp.	2,621
20	("intravenous lipid emulsion" or "parenteral lipid emulsion" or "fat emulsion therapy" or intrafat* or travamulsion or "Liposyn III").ti,ab,kw.	954
21	(LCT* or linolenic* or linoleic* or lipidem* or lipoplus* or liposyn* or lipovenoes* or lipofundin*).tw.	43,735
22	("Soybean oil, phospholipid emulsion" or "Soybean Phospholipids" or "Lipid Emulsion").mp.	8,319
23	((oil adj3 emulsion*) or (soybean adj3 oil adj3 emulsion*) or (soy adj3 lipid adj3 emulsion*) or (soy adj3 oil adj3 infusion*) or (soy adj3 based adj3 lipid adj3 emulsion*) or (soybean adj3 IV adj3 lipid adj3 emulsion*)).ti,ab,kw.	11,490
24	or/17-23	66,914
P and I / Filters		
25	16 and 24	978
26	Animals/ not Human/	1,242,703
27	25 not 26	887

S1-3. Cochrane Central Register of Controlled Trials (CENTRAL)

No.	Search terms	Results
Population (P)		
1	MeSH descriptor: [Infertility] explode all trees	4,549
2	MeSH descriptor: [Abortion, Spontaneous] explode all trees	1,336
3	((infertil* or subfertil* or steril*)):ti,ab,kw	24,972
4	((miscarriage* or pregnancy NEXT loss or implantation NEXT failure*)):ti,ab,kw	4,461
5	((pregnancy near/3 loss) or (implantation near/3 failure*)):mp	21,210
6	#1 or #2 or #3 or #4 or #5	49,307
7	MeSH descriptor: [Fertilization in Vitro] explode all trees	2,906
8	MeSH descriptor: [Embryo Transfer] explode all trees	1,524
9	MeSH descriptor: [Sperm Injections, Intracytoplasmic] explode all trees	784
10	MeSH descriptor: [Reproductive Techniques, Assisted] explode all trees	4,555
11	MeSH descriptor: [Insemination, Artificial] explode all trees	487
12	(in NEXT vitro NEXT fertil* or intra?cytoplasmic NEXT sperm* or "artificial insemination" or "intrauterine insemination" or assisted NEXT reproducti*):ti,ab,kw	7,341
13	(IVF or ICSI or ART or RIF or RPL or RSA):ti,ab,kw	20,792
14	#7 or #8 or #9 or #10 or #11 or #12 or #13	24,803
15	#6 or #14	65,783
Intervention (I)		
16	MeSH descriptor: [Fat Emulsions, Intravenous] explode all trees	566
17	((intralipid\$ or ivelip\$)):ti,ab,kw	598
18	((((fat near/3 emulsion* near/3 intravenous) or (IV near/3 lipid near/3 emulsion*) or "lipid Emulsions")):ti,ab,kw	783
19	((("intravenous lipid emulsion" or "parenteral lipid emulsion" or "fat emulsion therapy" or intrafat\$ or travamulsion or "Liposyn III")):ti,ab,kw	98
20	(LCT* or linolenic* or linoleic* or lipidem* or lipoplus* or liposyn* or lipovenoes* or lipofundin*):ti,ab,kw	3,098
21	("Soybean oil, phospholipid emulsion" or "Soybean Phospholipids" or "Lipid Emulsion"):ti,ab,kw	655
22	(oil or soy or soybean) near/3 (emulsion* or infusion*):ti,ab,kw	639
23	#16 or #17 or #18 or #19 or #20 or #21 or #22	4,628
P and I / Study type filters		
24	#15 and #23	144
–	Trials	132
–	Cochrane reviews (11) / Cochrane protocols (1)	12

S1-4. Scopus (1970 to April 14, 2025)

No.	Search terms	Results
Population (P)		
1	TITLE-ABS-KEY(infertility OR "female infertility")	174,742
2	TITLE-ABS-KEY(infert* OR subfert* OR "sterility")	212,883
3	TITLE-ABS-KEY("abortion" OR "spontaneous" OR "spontaneous abortion")	745,347
4	TITLE-ABS-KEY("miscarriage*" OR (pregnancy W/3 loss) OR (implantation W/3 failure*))	43,346
5	TITLE-ABS-KEY(RIF OR RPL)	17,830
6	or/1-5	966,045
7	TITLE-ABS-KEY("in vitro fertilization")	52,928
8	TITLE-ABS-KEY("infertility therapy" OR "infertility treatment")	31,659
9	TITLE-ABS-KEY("artificial insemination" OR "intrauterine insemination" OR "IUI")	30,824
10	TITLE-ABS-KEY("in vitro fertil*")	53,755
11	TITLE-ABS-KEY("artificial insemination" OR "intrauterine insemination" OR "assisted reproducti*" OR "assisted reproductive techn*")	60,903
12	or/7-11	115,192
13	6 or 12	1,016,955
Intervention (I)		
14	TITLE-ABS-KEY("lipid emulsion" OR intralipid)	12,554
15	TITLE-ABS-KEY(intralipid* OR ivelip*)	6,119
16	TITLE-ABS-KEY((fat W/3 emulsion W/3 intravenous) OR (IV W/3 lipid W/3 emulsion*) OR "lipid emulsions")	9,139
17	TITLE-ABS-KEY("intravenous lipid emulsion" OR "parenteral lipid emulsion" OR "fat emulsion therapy" OR "intrafat*" OR "travamulsion" OR "Liposyn III")	1,108
18	TITLE-ABS-KEY(linolenic* OR linoleic* OR lipidem* OR lipoplus* OR liposyn* OR lipovenoes* OR lipofundin*)	83,637
19	TITLE-ABS-KEY("Soybean oil, phospholipid emulsion" OR "Soybean Phospholipids" OR "Lipid Emulsion")	8,735
20	TITLE-ABS-KEY((oil W/3 emulsion*) OR (soybean W/3 oil W/3 emulsion*) OR (soy W/3 lipid W/3 emulsion*) OR (soy W/3 oil W/3 infusion*) OR (soy W/3 based W/3 lipid W/3 emulsion*) OR (soybean W/3 IV W/3 lipid W/3 emulsion*))	35,652
21	or/14-20	130,184
P and I / Filters		
22	13 and 21	1,441
23	(ALL(animals) AND NOT ALL(human))	4,523,455
24	22 AND NOT 23	1,289

S1-5. Web of Science (1964 to April 14, 2025)

No.	Search terms	Results
Population (P)		
1	ALL=("Infertility" OR "Infertility, Female")	84,908
2	TS=(infertil* OR subfertil* OR sterility)	121,663
3	ALL=("Abortion" OR "Spontaneous")	499,504
4	TS=("miscarriage*" OR (pregnancy NEAR/3 loss) OR (implantation NEAR/3 failure*))	38,346
5	TS=(RIF OR RPL)	15,230
6	or/1-5	652,484
7	ALL=("in vitro fertilization")	44,554
8	ALL=("infertility therapy")	189
9	ALL=("artificial insemination")	13,675
10	TS=("in vitro fertil*")	46,262
11	TS=("artificial insemination" OR "intrauterine insemination" OR "assisted reproducti*")	45,194
12	or/7-11	79,623
13	6 or 12	701,916
Intervention (I)		
14	ALL=("lipid emulsion" OR intralipid)	6,616
15	TS=(intralipid* OR ivelip*)	3,666
16	TS=((fat NEAR/3 emulsion* NEAR/3 intravenous) OR (IV NEAR/3 lipid NEAR/3 emulsion*) OR "lipid Emulsions")	2,523
17	TS=("intravenous lipid emulsion" OR "parenteral lipid emulsion" OR "fat emulsion therapy" OR "intrafat*" OR "travamulsion" OR "Liposyn III")	797
18	TS=(linolenic* OR linoleic* OR lipidem* OR lipoplus* OR liposyn* OR lipovenoes* OR lipofundin*)	63,753
19	TS=("Soybean oil, phospholipid emulsion" OR "Soybean Phospholipids" OR "Lipid Emulsion")	3,736
20	TS=((oil NEAR/3 emulsion*) OR (soybean NEAR/3 oil NEAR/3 emulsion*) OR (soy NEAR/3 lipid NEAR/3 emulsion*) OR (soy NEAR/3 oil NEAR/3 infusion*) OR (soy NEAR/3 based NEAR/3 lipid NEAR/3 emulsion*) OR (soybean NEAR/3 IV NEAR/3 lipid NEAR/3 emulsion*))	28,130
21	or/14-20	98,776
P and I / Filters		
22	13 and 21	1,042
23	TS=(animals) NOT TS=(human)	1,145,636
24	22 not 23	972

S1-6. KoreaMed (searched April 14, 2025)

No.	Search terms	Results
Population (Infertility & ART)		
1	"Fertilization in Vitro"[ALL] OR "reproductive techniques"[ALL] OR ART[ALL] OR IVF[ALL] OR ICSI[ALL] OR infertility[ALL] OR "pregnancy loss"[ALL] OR miscarriage[ALL] OR "spontaneous abortion"[ALL] OR "implantation failure"[ALL] OR RSA[ALL] OR RPL[ALL] OR RIF[ALL]	3,185
Intervention (Intralipid)		
2	"Fat Emulsions"[ALL] or (Intravenous[ALL] AND emulsion[ALL]) or intralipid[ALL]	58
P and I		
3	1 AND 2	55

S1-7. KMBase (searched April 14, 2025)

Searches were conducted separately using English and Korean search terms.

No.	Search terms	Results
Population – Infertility (English terms)		
1	(infertility title) OR (infertility keyword) OR (infertility abstract)	1,402
Population – ART (English terms)		
2	(IVF title) OR (IVF keyword) OR (IVF abstract)	850
3	(Fertilization in Vitro title) OR (Fertilization in Vitro abstract) OR (Fertilization in Vitro keyword)	73
Intervention – Intralipid (English terms)		
4	((intralipid title) OR (intralipid abstract) OR (intralipid keyword)) OR ((fat emulsion title) OR (fat emulsion keyword) OR (fat emulsion abstract))	56
5	(intravenous emulsion title) OR (intravenous emulsion keyword) OR (intravenous emulsion abstract)	0
P and I (English terms)		
6	(1 or 2 or 3) and (4 or 5)	0
Population – Infertility (Korean terms: 난임)		
7	(난임 title) OR (난임 abstract) OR (난임 keyword)	131
Population – ART (Korean terms: 보조생식술/ 난임시술)		
8	(보조생식술 title) OR (보조생식술 abstract) OR (보조생식술 keyword) OR (난임시술 title) OR (난임시술 abstract) OR (난임시술 keyword)	125
Intervention – Intralipid (Korean terms: 인트라리피드/ 정맥대두유)		
9	(인트라리피드 title) OR (인트라리피드 abstract) OR (인트라리피드 keyword)	0
10	(정맥대두유 title) OR (정맥대두유 keyword) OR (정맥대두유 abstract)	0
P and I (Korean terms)		
11	(7 or 8) and (9 or 10)	0