

SUPPLEMENTARY MATERIALS

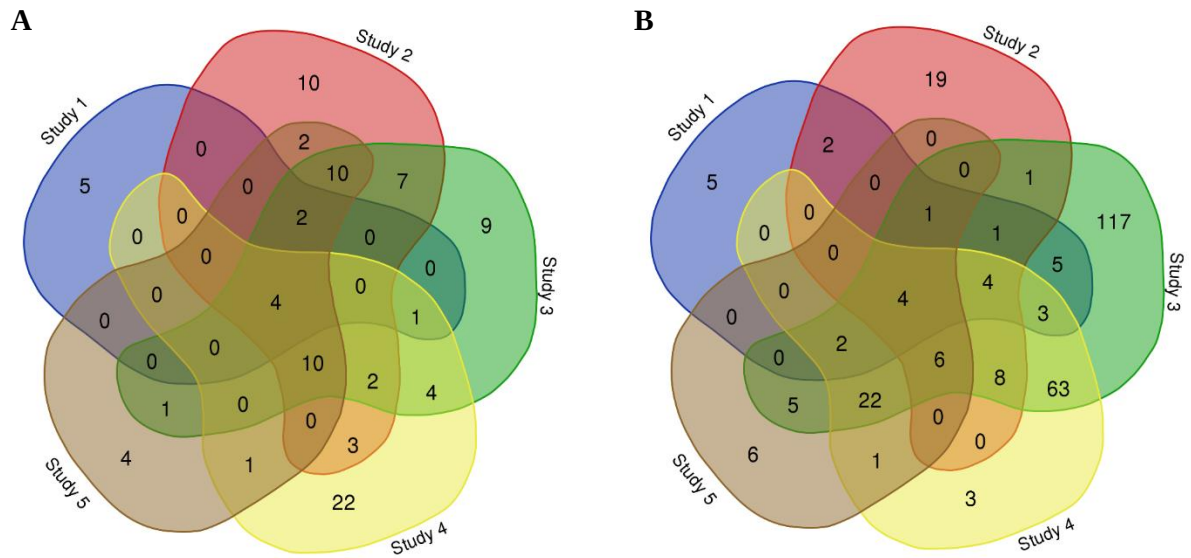
Supplementary table S1: Modulated genes in HepG2 cell line in response to exosomes loaded with mimic hsa-miR-148a-3p.

Fold Change	Adjusted <i>p</i> -value (<i>p</i> < 0.05)	Gene Symbol	Description
3.02411	0.0006	<i>ARRDC3</i>	arrestin domain containing 3
2.92093	0.0000	<i>MIXL1</i>	Mix paired-like homeobox
2.75985	0.0096	<i>ASNS</i>	asparagine synthetase (glutamine-hydrolyzing)
2.73121	0.0023	<i>GPCPD1</i>	glycerophosphocholine phosphodiesterase 1
2.72485	0.0489	<i>HEY1</i>	hes-related family bHLH transcription factor with YRPW motif 1
2.70549	0.0039	<i>SLC16A6</i>	solute carrier family 16. member 6
2.60822	0.0057	<i>TXNIP</i>	thioredoxin interacting protein
2.52284	0.0093	<i>ARRDC4</i>	arrestin domain containing 4
2.39935	0.0047	<i>OGFRL1</i>	opioid growth factor receptor-like 1
2.31384	0.0002	<i>MNS1</i>	meiosis-specific nuclear structural 1
2.21715	0.0008	<i>FYN</i>	FYN proto-oncogene. Src family tyrosine kinase
2.11601	0.0116	<i>S100P</i>	S100 calcium binding protein P
2.00188	0.0174	<i>TRIB3</i>	tribbles pseudokinase 3
0.49887	0.0007	<i>KLB</i>	klotho beta
0.49878	0.0252	<i>SCG5</i>	secretogranin V
0.49754	0.0001	<i>SMLR1</i>	small leucine-rich protein 1
0.49518	0.0071	<i>ANK2</i>	ankyrin 2. neuronal
0.49192	0.0002	<i>ZBTB38</i>	zinc finger and BTB domain containing 38
0.48135	0.0079	<i>SLC38A11</i>	solute carrier family 38. member 11
0.47723	0.0016	<i>RORA</i>	RAR-related orphan receptor A
0.47677	0.0116	<i>SLC17A2</i>	solute carrier family 17. member 2
0.47618	0.0003	<i>IKBKAP</i>	inhibitor of kappa light polypeptide gene enhancer in B-cells. kinase complex-associated protein
0.47551	0.0496	<i>FAM160A1</i>	family with sequence similarity 160. member A1
0.47368	0.0079	<i>SCARA3</i>	scavenger receptor class A. member 3
0.47015	0.0071	<i>TTPA</i>	tocopherol (alpha) transfer protein
0.46541	0.0013	<i>TAS2R10</i>	taste receptor. type 2. member 10
0.46228	0.0022	<i>SLCO1B3</i>	solute carrier organic anion transporter family. member 1B3
0.46217	0.0002	<i>ARG2</i>	arginase 2
0.45965	0.0006	<i>CITED2</i>	Cbp/p300-interacting transactivator. with Glu/Asp rich carboxy-terminal domain. 2
0.45873	0.0121	<i>PLCXD1</i>	phosphatidylinositol-specific phospholipase C. X domain containing 1
0.45134	0.0215	<i>SLC6A12</i>	solute carrier family 6 (neurotransmitter transporter). member 12
0.45092	0.0005	<i>FST</i>	folliculin
0.45074	0.0008	<i>BDH1</i>	3-hydroxybutyrate dehydrogenase. type 1
0.44793	0.0008	<i>NTN4</i>	netrin 4
0.44532	0.0448	<i>SGK1</i>	serum/glucocorticoid regulated kinase 1

0.43445	0.0015	<i>KAT2B</i>	K(lysine) acetyltransferase 2B
0.43250	0.0083	<i>G6PC</i>	glucose-6-phosphatase, catalytic subunit
0.42743	0.0133	<i>ONECUT1</i>	one cut homeobox 1
0.42488	0.0028	<i>INSIG2</i>	insulin induced gene 2
0.41904	0.0351	<i>ELF5</i>	E74-like factor 5 (ets domain transcription factor)
0.41901	0.0007	<i>SLC10A5</i>	solute carrier family 10, member 5
0.41292	0.0271	<i>THAP2</i>	THAP domain containing, apoptosis associated protein 2
0.41108	0.0008	<i>SULT2A1</i>	sulfotransferase family 2A member 1
0.40762	0.0005	<i>BCL6</i>	B-cell CLL/lymphoma 6
0.40280	0.0003	<i>ACSM3</i>	acyl-CoA synthetase medium-chain family member 3
0.40219	0.0000	<i>SCN9A</i>	sodium channel, voltage gated, type IX alpha subunit
0.39330	0.0000	<i>AKR1C3</i>	aldo-keto reductase family 1, member C3
0.39245	0.0002	<i>GPR119</i>	G protein-coupled receptor 119
0.39067	0.0001	<i>SLC1A2</i>	solute carrier family 1 (glial high affinity glutamate transporter), member 2
0.38920	0.0021	<i>SOX6;</i> <i>MIR6073</i>	SRY box 6; microRNA 6073
0.33501	0.0010	<i>NEGR1</i>	neuronal growth regulator 1
0.31512	0.0000	<i>ODAM</i>	odontogenic, ameloblast associated
0.30236	0.0071	<i>CAB39L</i>	calcium binding protein 39-like
0.29073	0.0193	<i>CYP3A5</i>	cytochrome P450, family 3, subfamily A, polypeptide 5
0.28986	0.0000	<i>AKR1C2</i>	aldo-keto reductase family 1, member C2
0.28230	0.0000	<i>AKR1C1</i>	aldo-keto reductase family 1, member C1

Supplementary table S2: Modulated genes in Caco-2 cell line in response to exosomes loaded with mimic hsa-miR-148a-3p.

Fold Change	Adjusted <i>p</i> -value (<i>p</i> < 0.05)	Gene Symbol	Description
2.0723	0.0043	<i>ODF2L</i>	outer dense fiber of sperm tails 2-like
2.0217	0.0138	<i>ANKRD36</i>	Transcript Identified by AceView. Entrez Gene ID(s) 375248
2.5385	0.0000	<i>SCAF11</i>	Memczak2013 ANTISENSE. CDS. coding. INTERNAL best transcript NM_004719
2.2439	0.0002	<i>LNPEP</i>	Memczak2013 ANTISENSE. coding. INTERNAL. UTR3 best transcript NM_175920
2.0133	0.0001	<i>HLTF</i>	helicase-like transcription factor
2.2565	0.0004	<i>C16orf72</i>	Memczak2013 ANTISENSE. coding. INTERNAL. intronic best transcript NM_014117
3.8105	0.0019	<i>LGALS14</i>	lectin. galactoside-binding. soluble. 14
2.1757	0.0000	<i>AFF4</i>	Memczak2013 ANTISENSE. CDS. coding. INTERNAL best transcript NM_014423
2.1260	0.0063	<i>PLOD2</i>	procollagen-lysine. 2-oxoglutarate 5-dioxygenase 2
2.0288	0.0000	<i>CDC42</i>	Transcript Identified by AceView. Entrez Gene ID(s) 998
2.2593	0.0112	<i>C18orf54</i>	chromosome 18 open reading frame 54
2.4183	0.0038	<i>ARL5A</i>	ADP-ribosylation factor like GTPase 5A
2.2255	0.0009	<i>DDX5</i>	Memczak2013 ANTISENSE. CDS. coding. INTERNAL best transcript NM_004396
2.0631	0.0006	<i>LUM</i>	lumican
2.1211	0.0000	<i>PAIP2; CTB-43P18.1</i>	poly(A) binding protein interacting protein 2 [Source:EntrezGene;Acc:51247]; novel transcript. antisense to PAIP2
2.6759	0.0082	<i>FAM45A</i>	Transcript Identified by AceView. Entrez Gene ID(s) 404636
2.2481	0.0160	<i>TSNAX</i>	Memczak2013 ANTISENSE. CDS. coding. INTERNAL. UTR3 best transcript NM_005999
2.3531	0.0002	<i>USP34</i>	Memczak2013 ANTISENSE. CDS. coding. INTERNAL best transcript NM_014709
0.4902	0.0022	<i>ID1</i>	inhibitor of DNA binding 1. dominant negative helix-loop-helix protein
0.4903	0.0004	<i>TMEM150B</i>	transmembrane protein 150B
0.4524	0.0000	<i>TFF3</i>	trefoil factor 3



Supplementary figure S1: (A) Venn diagram comparing miRNA profile of human breast milk exosomes from five previously published studies. Study 1 [60]; Study 2 [61]; Study 3 [62]; Study 4 [63]; Study 5 [12]. (B) Venn diagram comparing miRNA profile of bovine milk exosomes from five previously published studies. Study 1 [64]; Study 2 [11]; Study 3 [65]; Study 4 [66]; Study 5 [67].

Supplementary table S3: Most abundant and common miRNAs of human breast milk exosomes from five previously published studies. Study 1 [60]; Study 2 [61]; Study 3 [62]; Study 4 [63]; Study 5 [12].

Studies	Total	miRNAs
Study 1 Study 2 Study 3 Study 4 Study 5	4	hsa-miR-148a-3p ; hsa-miR-200a-3p; hsa-miR-29a-3p; hsa-miR-146b-5p
Study 1 Study 2 Study 3 Study 5	2	hsa-miR-30b-5p; hsa-miR-141-3p
Study 2 Study 3 Study 4 Study 5	10	hsa-miR-30d-5p; hsa-miR-30a-5p; hsa-miR-26a-5p; hsa-miR-21-5p; hsa-miR-200c-3p; hsa-miR-200b-3p; hsa-miR-92a-3p; hsa-miR-22-3p; hsa-miR-99a-5p; hsa-miR-191-5p
Study 1 Study 3 Study 4	1	hsa-miR-182-5p
Study 2 Study 3 Study 4	2	hsa-miR-27b-3p; hsa-miR-103a-3p
Study 2 Study 3 Study 5	10	hsa-miR-30c-5p; hsa-let-7b-5p; hsa-let-7f-5p; hsa-miR-335-5p; hsa-miR-320a; hsa-miR-181a-5p; hsa-miR-375; hsa-let-7g-5p; hsa-let-7a-5p; hsa-miR-16-5p
Study 2 Study 3	7	hsa-miR-181b-5p; hsa-miR-25-3p; hsa-miR-29c-3p; hsa-miR-423-5p; hsa-miR-30e-5p; hsa-miR-429; hsa-miR-151a-3p
Study 2 Study 4	3	hsa-miR-101-3p; hsa-miR-148a-5p; hsa-miR-6087
Study 2 Study 5	2	hsa-let-7i-5p; hsa-miR-24-3p
Study 3 Study 4	4	hsa-miR-99b-5p; hsa-miR-378a-3p; hsa-miR-148b-3p; hsa-miR-10a-5p
Study 3 Study 5	1	hsa-miR-186-5p
Study 4 Study 5	1	hsa-miR-143-3p
Study 1	5	hsa-let-7f-2-5p; hsa-let-7f-1-5p; hsa-let-7a-2-5p; hsa-miR-378-3p; hsa-let-7a-3-5p
Study 2	10	hsa-miR-193a-3p; hsa-miR-19b-3p; hsa-miR-106b-5p; hsa-miR-125b-5p; hsa-miR-29b-3p; hsa-miR-511-3p; hsa-miR-151a-5p; hsa-miR-511-5p; hsa-miR-27a-3p; hsa-miR-7704

Study 3	9	hsa-miR-574-3p; hsa-miR-1307-5p; hsa-miR-193b-3p; hsa-let-7d-3p; hsa-miR-125a-5p; hsa-miR-345-5p; hsa-miR-423-3p; hsa-miR-28-3p; hsa-miR-107
Study 4	22	hsa-miR-340-5p; hsa-miR-370-3p; hsa-miR-375-3p; hsa-miR-183-5p; hsa-hsa-let-7a-5p; hsa-miR-378c-5p; hsa-miR-223-5p; hsa-miR-184-3p; hsa-miR-140-3p; hsa-miR-589-5p; hsa-miR-192-5p; hsa-miR-615; hsa-miR-532-5p; hsa-miR-181a-1; hsa-hsa-let-7g-5p; hsa-hsa-let-7b-5p; hsa-miR-100-5p; hsa-miR-485-5p; hsa-miR-10b-5p; hsa-miR-320a-3p; hsa-miR-411-5p; hsa-hsa-let-7f-5p
Study 5	4	hsa-let-7d-5p; hsa-miR-26b-5p; hsa-let-7c-5p; hsa-let-7e-5p

Supplementary table S4: Most abundant and common miRNAs of bovine milk exosomes from five previously published studies. Study 1 [64]; Study 2 [11]; Study 3 [65]; Study 4 [66]; Study 5 [67].

Studies	Total	miRNAs
Study 1 Study 2 Study 3 Study 4 Study 5	4	bta-let-7b; bta-miR-148a ; bta-let-7f; bta-let-7c
Study 1 Study 2 Study 3 Study 4	4	bta-miR-125b; bta-miR-103; bta-miR-141; bta-miR-29c
Study 1 Study 2 Study 3 Study 5	1	bta-miR-20a
Study 1 Study 3 Study 4 Study 5	2	bta-miR-27b; bta-miR-92a
Study 2 Study 3 Study 4 Study 5	6	bta-miR-24-3p; bta-miR-26b; bta-miR-30a-5p; bta-miR-423-5p; bta-let-7g; bta-miR-30d
Study 1 Study 2 Study 3	1	bta-miR-26a-5p
Study 1 Study 3 Study 4	3	bta-miR-29b; bta-miR-15b; bta-miR-155
Study 2 Study 3 Study 4	8	bta-miR-200b; bta-miR-2887; bta-miR-200c; bta-miR-2478; bta-let-7d; bta-miR-200a; bta-miR-375; bta-miR-29a

Study 3 Study 4 Study 5	22	bta-let-7a-5p; bta-miR-25; bta-miR-191; bta-miR-10b; bta-miR-182; bta-miR-16b; bta-miR-151-5p; bta-let-7i; bta-miR-98; bta-miR-99a-5p; bta-miR-186; bta-miR-22-3p; bta-miR-93; bta-miR-30e-5p; bta-miR-21-5p; bta-miR-146b; bta-miR-92b; bta-miR-127; bta-miR-99b; bta-miR-27a-3p; bta-miR-320a; bta-miR-151-3p
Study 1 Study 2	2	bta-miR-320; bta-let-7a
Study 1 Study 3	5	bta-miR-24; bta-miR-34a; bta-miR-106b; bta-miR-181d; bta-miR-223
Study 2 Study 3	1	bta-miR-1343
Study 3 Study 4	63	bta-miR-425-5p; bta-miR-374a; bta-miR-502b; bta-miR-345-5p; bta-miR-1307; bta-miR-23b-3p; bta-miR-365-3p; bta-miR-877; bta-miR-2284x; bta-miR-125a; bta-miR-193a-5p; bta-miR-30c; bta-miR-148b; bta-miR-152; bta-miR-143; bta-miR-107; bta-miR-532; bta-miR-142-5p; bta-miR-4286; bta-miR-339a; bta-miR-374b; bta-miR-484; bta-miR-30f; bta-miR-183; bta-let-7e; bta-miR-192; bta-miR-362-5p; bta-miR-23a; bta-miR-1468; bta-miR-423-3p; bta-miR-339b; bta-miR-574; bta-miR-342; bta-miR-7859; bta-miR-429; bta-miR-181b; bta-miR-769; bta-miR-363; bta-miR-502a; bta-miR-421; bta-miR-128; bta-miR-2285f; bta-miR-652; bta-miR-660; bta-miR-185; bta-miR-340; bta-miR-194; bta-miR-181a; bta-miR-197; bta-miR-500; bta-miR-96; bta-miR-885; bta-miR-2285k; bta-miR-2285t; bta-miR-2904; bta-miR-30b-5p; bta-miR-378; bta-miR-28; bta-miR-331-5p; bta-miR-361; bta-miR-425-3p; bta-miR-140; bta-miR-16a
Study 3 Study 5	5	bta-miR-1246; bta-miR-15a; bta-miR-486; bta-miR-10a; bta-miR-126-5p
Study 4 Study 5	1	bta-miR-26a
Study 1	5	bta-miR-130a; bta-miR-133a; bta-miR-494; bta-miR-133b; bta-miR-200e
Study 2	19	bta-miR-2888; bta-miR-1777b; bta-miR-2881; bta-miR-2305; bta-miR-2374; bta-miR-1777a; bta-miR-2291; bta-miR-1584; bta-miR-2284l; bta-miR-1224; bta-miR-92; bta-miR-2391; bta-miR30f; bta-miR-2284d; bta-miR-2892; bta-miR-2412; bta-miR-2304; bta-miR-1249; bta-miR-664

Study 3	117	bta-miR-2284z; bta-miR-2285s; bta-miR-33b; bta-miR-410; bta-miR-106a; bta-miR-196a; bta-miR-2411-5p; bta-miR-6123; bta-miR-7861; bta-miR-2336; bta-miR-2446; bta-miR-181c; bta-miR-18a; bta-miR-2284o; bta-miR-21-3p; bta-miR-296-5p; bta-miR-101; bta-miR-450b; bta-miR-31; bta-miR-17-3p; bta-miR-6119-5p; bta-miR-17-5p; bta-miR-2357; bta-miR-628; bta-miR-744; bta-miR-136; bta-miR-490; bta-miR-874; bta-miR-29d-5p; bta-miR-2284b; bta-miR-454; bta-miR-27a-5p; bta-miR-3432; bta-miR-2285o; bta-miR-1291; bta-miR-362-3p; bta-miR-409a; bta-miR-2435; bta-miR-1388-5p; bta-miR-146a; bta-miR-32; bta-miR-6119-3p; bta-miR-7; bta-miR-215; bta-miR-760-5p; bta-miR-2284ab; bta-miR-2285e; bta-miR-6517; bta-miR-2443; bta-miR-150; bta-miR-6522; bta-miR-2285j; bta-miR-132; bta-miR-2284ac; bta-miR-345-3p; bta-miR-301a; bta-miR-365-5p; bta-miR-190a; bta-miR-20b; bta-miR-664b; bta-miR-2320-5p; bta-miR-6525; bta-miR-2284j; bta-miR-2284h; bta-miR-2284y; bta-miR-2885; bta-miR-6120-5p; bta-miR-6524; bta-miR-23b-5p; bta-miR-19b; bta-miR-505; bta-miR-1839; bta-miR-2284v; bta-miR-326; bta-miR-1296; bta-miR-210; bta-miR-6529; bta-miR-2313-5p; bta-miR-2285z; bta-miR-2285c; bta-miR-188; bta-miR-7864; bta-miR-149-5p; bta-miR-499; bta-miR-324; bta-miR-378b; bta-let-7a-3p; bta-miR-19a; bta-miR-6516; bta-miR-1260b; bta-miR-7858; bta-miR-378c; bta-miR-154c; bta-miR-2284w; bta-miR-2284aa-4; bta-miR-545-5p; bta-miR-331; bta-miR-2299-5p; bta-miR-411a; bta-miR-6523; bta-miR-130b; bta-miR-2285aa; bta-miR-2284n; bta-miR-2411-3p; bta-miR-7857; bta-miR-135a; bta-miR-196b; bta-miR-328; bta-miR-2419-5p; bta-miR-2285q; bta-miR-22-5p; bta-miR-2285g-3p; bta-miR-335; bta-miR-99a-3p; bta-miR-671; bta-miR-338; bta-miR-1343-3p
Study 4	3	bta-miR-6529a; bta-miR-6120-3p; bta-miR-3432a
Study 5	6	bta-miR-122; bta-miR-451; bta-miR-126-3p; bta-miR-221; bta-miR-100; bta-miR-1