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Supplementary Materials for

Obesity management medications: The way forward

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Table S1
References

Table S1. Selected anti-obesity drug candidates in clinical development, categorized by mechanism of action and development stage.

Drug candidates in phase 3 clinical trials are highlighted in blue. Abbreviations: GLP-1R, glucagon-like peptide-1 receptor; GIPR, glucose-dependent insulinotropic polypeptide receptor; GCGR, glucagon receptor; GLP-2R, glucagon-like peptide-2 receptor; FGF21, fibroblast growth factor 21; FGFR1c, fibroblast growth factor receptor 1c; KLB, β-Klotho co-receptor; CB1R, cannabinoid receptor type 1; MGAT2, monoacylglycerol acyltransferase 2; GDF15, growth differentiation factor 15; NPY Y2 receptor, neuropeptide Y receptor subtype Y2; MASH, metabolic dysfunction-associated steatohepatitis; s.c., subcutaneous; i.v., intravenous. Clinical development stages (Phases I–III) indicate the most advanced publicly reported stage of development for each compound. ClinicalTrials.gov identifiers correspond to representative registered clinical studies. "Not identified" indicates that no suitable obesity-related ClinicalTrials.gov entry could be confirmed, whereas "Not applicable" denotes compounds that remain in preclinical development.

Drug / Compound	**Company**	**Mechanism of action**	**Development stage**	**Application**	**ClinicalTrials.gov ID**	**Trial name**
Incretin-based drugs						
GLP-1/ glucagon dual agonists						
Survodutide	Boehringer Ingelheim	Dual GLP-1R/ glucagon receptor agonist	Phase III	Once weekly s.c.	NCT06066515 NCT06066528	SYNCHRONIZE-1 SYNCHRONIZE-2
Mazdutide	Innovent, Eli Lilly	Oxyntomodulin-Analog, Dual GLP-1R/ glucagon receptor agonist	Phase II Phase III	Once weekly s.c.	NCT06124807 NCT04944992 NCT05607680	- - GLORY-1
Efinopegdutide	Merck Sharp & Dohme	Dual GLP-1R/ glucagon receptor agonist	Phase IIb	Once weekly s.c.	NCT06482112	MK-6024-001 MK-6024-016
Pemvidutide	Altimmune	Dual GLP-1R/ glucagon receptor agonist	Phase II	Once weekly s.c.	NCT04881760	-

GLP1/GIP targeting						
Maridebart Cafraglutide	Amgen	GLP-1R agonist, GIP antagonist	Phase III	Once monthly s.c.	NCT06858839	MARITIME-1
VK2735	Viking Therapeutics	Dual GLP-1/ GIP receptor agonist	Phase II	Oral once daily Once weekly s.c.	NCT05203237	-
GLP-1/GIP/Glucagon tri-agonists						
Retatrutide	Eli Lilly	Triple GLP-1/ GIP/ glucagon receptor agonist	Phase III	Once weekly s.c.	NCT05929066 NCT06383390	TRIUMPH-1 TRIUMPH-OUTCOMES
HM15275	Hanmi Pharmaceutical	Triple GLP-1/ GIP/ glucagon receptor agonist	Phase II	Once weekly s.c.	NCT06481098	-
Efocipegtrutide	Hanmi Pharmaceutical	Triple GLP-1/ GIP/ glucagon receptor agonist	Phase II	Once weekly s.c.	NCT04505436 NCT03374241	- -
GIP agonists						
LY3532226	Eli Lilly	GIPR monoagonist	Phase II	Once weekly s.c.	NCT05887999	-
GLP-1R agonists						
Efpeglenatide	Hanmi Pharmaceutical	GLP-1R agonism	Phase III	Once weekly s.c.	NCT03496298	AMPLITUDE-O

Elecoglipron	AstraZeneca	GLP-1R agonism	Phase III	Oral once daily	NCT06579092 NCT07667803	VISTA EMBOLD
Danuglipron	Pfizer	GLP-1R agonism	Phase II Terminated	Oral once daily	NCT04707313	-
Lotiglipron	Pfizer	GLP-1R agonism	Phase I	Oral once daily	NCT04305587 NCT05158244	-
GLP2 agonists						
Sonefpeglutide	Hanmi Pharmaceutical	GLP2 agonism	Phase II	s.c.	NCT04775706	DOLPHINS-2
GLP1/GLP2 dual agonists						
Dapiglutide	University Copenhagen	Dual GLP1/ GLP2 agonism	Phase II	Once weekly s.c.	NCT05788601	DREAM
Glucagon analogs						
Efpegerglucagon	Hanmi Pharmaceutical	Glucagon agonism (Indikation: kongenitaler Hyperinsulinismus)	Phase II	Once weekly s.c.	NCT04732416	ACHIEVE
Amylin analogues and dual Amylin and Calcitonin Receptor Agonists						
CagriSema	Novo Nordisk	GLP-1R and amylin agonism	Phase III	Once weekly s.c.	NCT05579054 NCT05394519	REDEFINE-1 REDEFINE-2

Zenagamtide	Novo Nordisk	Dual amylin and calcitonin receptor agonism	Phase III	Once weekly s.c. Oral, once daily	NCT07668414	AMAZE
Eloralintide	Eli Lilly	Selective amylin receptor agonism	Phase III	Once weekly s.c.	NCT07282600	ENLIGHTEN-2
Petrelintide	Roche	Amylin receptor agonism	Phase II	Once weekly s.c.	NCT06662539	ZUPREME-1
Colulintide	Eli Lilly	Dual amylin and calcitonin receptor agonism	Phase II terminated	Once weekly s.c.	NCT05380323	-
Dual oxyntomodulin analog						
DA-1726	MetaVia	GLP1R and GCGR agonist	Phase I	s.c.	NCT06252220	-
Drugs targeting incretin independent mechanisms						
FGF21 analogs						
Pegozafermin	89bio, Inc.	FGF21 agonism	Phase III	s.c.	NCT06419374	ENLIGHTEN-Cirrhosis
Ghrelin pathway						
Livoletide	Millendo Therapeutics	Ghrelin analogon	Phase IIb	Daily s.c. (terminated)	NCT03790865	-
Neuropeptide Y2R agonists						

NNC0165-1562	Novo Nordisk	NPY 2 receptor agonism	Phase II	s.c. twice weekly	NCT03574584	
Activin type II receptor antagonist						
Bimagrumab	Eli Lilly	blocking activin type II receptors (ActRIIA and ActRIIB)	Phase II	Once per month intravenously	NCT05616013	BELIEVE
Trevogrumab	Regeneron	Myostatin inhibitor	Phase II	s.c.	NCT06299098	COURAGE
Garetosmab	Regeneron	(in combination with trevogrumab + semaglutide)	Phase II	s.c.	NCT06299098	COURAGE
Cannabinoid receptor (CB1R) inverse agonist						
Monlunabant	Novo Nordisk	CB1R inverse agonism	Phase II	Oral, once daily	NCT05891834	
Monoacylglycerol transferase 2 (MGAT2) inhibitor						
S-309309	Shionogi	monoacylglycerol transferase 2 (MGAT2) inhibition	Phase II	Oral, once daily	NCT05925114	
GDF 15 receptor agonist						
LY3463251	Eli Lilly	GDF15 agonisms	Phase I	s.c.	NCT03764774	
Partial nicotine receptor agonist						
Varenicline	Pfizer	Nicotine acetylcholine receptor agonism	Phase III	Oral	NCT02412631	

		(preventing post smoking cessation weight gain)				
Drugs in preclinical development						
Leptin sensitizer						
Withaferin A	(*32*)	Leptin sensitization, regulation of leptin in adipose tissue	Preclinical	TBD	Preclinical	-
Brown adipose tissue activators & mitochondrial uncoupler						
BAM 15	Continuum Biosciences	Disruption of the coupling between electron transport and ATP synthesis	Preclinical	TBD	Preclinical	-
GLP-1R-GIPR-PPARα/γ/δ quintuple agonism	(*33*)	Combining GLP-1R-GIPR co-agonism with lanifibranor via targeted delivery into GLP-1R- and GIPR-expressing cells	Preclinical	TBD	Preclinical	-
Cold and nicotinic receptors	(*34*)	Activation of the cold receptor transient	Preclinical	TBD	Preclinical	-

agonism		receptor potential cation channel subfamily M member 8 (TRPM8) with icilin				

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