CLINICAL MONOGRAPH · GROWTH-HORMONE AXIS (UNDER FDA REVIEW)

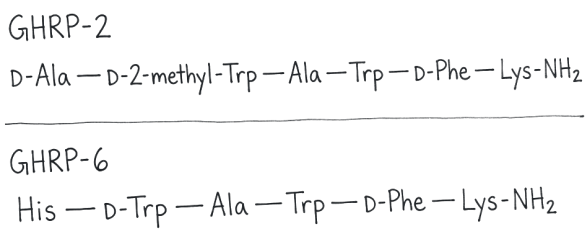
GHRP-2 / GHRP-6

Older GH-secretagogue peptides with physician-request review

GHRP-2 and GHRP-6 are small synthetic peptides developed in the 1980s and early 1990s by Cyril Bowers and colleagues [fda_503a_interim_policy]. They were the first peptides that could be designed in a laboratory and used to tell the pituitary gland to release growth hormone. They led directly to the discovery of the ghrelin receptor in 1996 and the discovery of ghrelin itself in 1999 [bowers1990, howard1996, kojima1999].

Unlike ipamorelin, a later-generation, more selective peptide, GHRP-2 and GHRP-6 are not clean: at the doses needed to release growth hormone, they also raise the stress hormone cortisol, ACTH, and prolactin, and GHRP-6 also makes people hungry by acting on the brain's appetite circuits [raun1998, kano2010, laferrere2005] [fda_503a_interim_policy]. Both were tested in small studies in children with short stature and in adults, but clinical development stopped in the late 1990s and early 2000s; only GHRP-2 has any current regulatory recognition (in Japan, as a research diagnostic test for adult growth hormone deficiency).

GHRP-2 and GHRP-6 have no FDA approval in the United States. This ingredient is part of an evolving FDA review process. Physicians may submit patient-specific prescription requests for pharmacy review. Availability is determined case by case, and availability may change after FDA review, PCAC discussion, final agency action, or state-board guidance.



EVIDENCE POSTURE EMERGING PRECLINICAL

REVIEWED **2026-05-11**

State-licensed 503A | Pharmacist reviewed | Doctor led | Cold-chain ready | Patient choice preserved

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FOR CLINICIANS

GHRP-2 (pralmorelin; D-Ala-D-2-Nal-Ala-Trp-D-Phe-Lys-NH2) and GHRP-6 (His-D-Trp-Ala-Trp-D-Phe-Lys-NH2) are synthetic hexapeptide and pentapeptide growth-hormone-releasing peptides disclosed by Bowers and colleagues in the late 1980s and early 1990s [bowers1991_action]. Both bind the growth hormone secretagogue receptor type 1a (GHS-R1a), the orphan receptor later identified by Howard et al [tiulpakov1995_metab]. (Science, 1996) [howard1996] and matched to the endogenous ligand ghrelin by Kojima et al. (Nature, 1999) [kojima1999]. Their development drove the broader discovery of the ghrelin-GHS axis [bowers2012_history].

Unlike the later selective pentapeptide ipamorelin [raun1998], GHRP-2 and GHRP-6 are non-selective at GH-releasing doses: they elevate prolactin, ACTH, and cortisol via hypothalamic and pituitary mechanisms [korbonits1995, korbonits1999, kano2010]. GHRP-6 specifically engages central ghrelin-receptor circuits to stimulate hunger and food intake [laferrere2005, laferrere2006]; GHRP-2 produces similar appetite signals in healthy and obese adults. In adults, single intravenous or intranasal doses produce dose-dependent GH peaks within minutes and downstream IGF-1 elevation over the dosing interval [tiulpakov1995_clinendo, hayashi1991]. Oral GHRP-6 has been characterized in normal aging [ghigo1994_eje, ghigo1994_invest] with arginine-augmentation effects in elderly subjects.

Clinical development centered on short-stature and adult GH-deficiency diagnostic testing. Pihoker, Reynolds, Bowers and colleagues studied GHRP-2 in children with short stature and GH insufficiency; Mericq et al [pihoker1995; pihoker1997; pihoker1998]. (1998) [mericq1998] reported eight-month treatment effects of graded GHRP doses in GH-deficient children. Gondo et al. (2001) [gondo2001] demonstrated that GHRP-2 stimulates GH secretion even in patients with mutated GHRH receptor, establishing GHS-R1a-mediated release as independent of the GHRH axis [bowers1990; bowers1991_substancep]. Kano et al. (2010) [kano2010] characterized the pituitary-adrenal response to GHRP-2 testing comparable to insulin tolerance testing. No phase 3 program was completed for any indication; GHRP-6 development ended with the cloning of GHS-R1a and identification of ghrelin, and GHRP-2 persists only as the diagnostic GHRP Kaken 100 in Japan.

GHRP-2 and GHRP-6 have no FDA approval in the United States. This ingredient is part of an evolving FDA review process. Physicians may submit patient-specific prescription requests for pharmacy review. Availability is determined case by case, and availability may change after FDA review, PCAC discussion, final agency action, or state-board guidance.

Why Personalized GHRP-2 / GHRP-6

The evidence base for GHRP-2 and GHRP-6 includes older endocrine studies showing growth-hormone release, but that is not the same as an FDA-approved therapeutic program. Safety, dosing, and off-label use remain constrained by the limited clinical record.

Physicians may submit patient-specific prescription requests for GHRP-2 and GHRP-6 for pharmacy review. Certain preparations may be available now when clinically appropriate, lawfully prescribed, supported by patient-specific documentation, and approved by the dispensing pharmacy. Availability is determined case by case. This is not a consumer access promise; it is a clinical, sourcing, formulation, and regulatory review process. These ingredients are part of an evolving FDA review process for peptide-related bulk substances used in compounding.

A physician-submitted request is the regulated alternative to research-peptide supply. It requires patient-specific rationale and pharmacist review rather than a consumer choosing a GH-secretagogue from an online menu.

Quick Facts About GHRP-2 / GHRP-6

Category: First-generation, non-selective ghrelin (GHS-R1a) receptor agonist peptides, growth hormone secretagogues

Active ingredient: GHRP-2 (pralmorelin; D-Ala-D-2-Nal-Ala-Trp-D-Phe-Lys-NH2) and GHRP-6 (His-D-Trp-Ala-Trp-D-Phe-Lys-NH2), synthetic peptides derived from the Bowers/Momany met-enkephalin scaffold and disclosed in the late 1980s and early 1990s

FDA-approved branded forms: None. Neither GHRP-2 nor GHRP-6 received FDA approval. GHRP-2 (pralmorelin) was developed as an investigational diagnostic agent for growth-hormone-deficiency testing and is licensed only in Japan as Kaken's GHRP Kaken 100 for adult GH-deficiency diagnostic testing; it has no U.S. marketing authorization. GHRP-6 was discontinued after the discovery of ghrelin and its receptor.

Route: Intravenous, subcutaneous, intranasal, and oral routes have been studied in research settings [tiulpakov1995_clinendo, hayashi1991, ghigo1994_eje, ghigo1994_invest]; no FDA-labeled route exists

Evidence posture: Emerging and preclinical. Discovery and adult human PK/PD characterization in the late 1980s and 1990s [bowers1990, bowers1991_action]; pediatric pharmacology and pilot short-stature trials [pihoker1995, pihoker1997, pihoker1998, tiulpakov1995_metab, mericq1998]; mechanistic ghrelin-receptor characterization [howard1996, kojima1999]; food-intake studies in adults [laferrere2005, laferrere2006]. No phase 3 program, no FDA approval.

Key distinction from ipamorelin: Unlike ipamorelin (selective GHS-R1a agonist), GHRP-2 and GHRP-6 are non-selective: at GH-releasing doses they also elevate prolactin, ACTH, and cortisol, and GHRP-6 increases hunger via central ghrelin-receptor effects [raun1998, korbonits1995, korbonits1999, kano2010, laferrere2005, laferrere2006]

FDA-approval status: Category 2, evolving FDA review process. Valid patient-specific prescription required; supporting clinical rationale may be requested.

Compounded under: Physicians may submit patient-specific prescription requests for pharmacy review. Availability is determined case by case.

WADA status: Category 2, evolving FDA review process. Valid patient-specific prescription required; supporting clinical rationale may be requested.

> **SPECIALS: PATIENT-SPECIFIC PRESCRIPTION ONLY**
>
> Physicians may submit patient-specific prescription requests for GHRP-2 / GHRP-6 for pharmacy review. Certain preparations may be available now when clinically appropriate, lawfully prescribed, and approved by the dispensing pharmacy. Availability is determined case by case.
>
> - **Made to order, not off a shelf.** No batch sits in a warehouse waiting for buyers. Your prescription triggers the prep.
> - **Named-patient label.** The bottle carries one patient's name. The batch records carry one prescription.
> - **Dose, strength, and route chosen for the patient.** A prescriber decides what gets compounded, not a manufacturer who set the strength for a trial population.
> - **Licensed pharmacist on the hook.** A real person, with a license that can be pulled, signs off on every prep. State inspectors check the facility.
> - **Compounded drugs are not FDA-approved.** They should not be evaluated using branded-drug trial data alone. Availability varies by state and prescribed medication.

How This Differs from a Research-Use-Only Website

A research-use-only website ships a vial from a warehouse. There is no prescription, no pharmacist, no facility inspection, and no way to recall the product if something is wrong with it. If the vial is mislabeled, contaminated, or under-potent, there is nobody whose license is at stake.

A 503A compounding pharmacy is the other thing. The doctor writes the prescription. A licensed pharmacist, whose name is on the label, prepares the medicine in a facility the state inspects. If something goes wrong, there is a person and a license on the hook, and a documented chain of custody on every lot. That accountability is what makes it safe.

What is GHRP-2 / GHRP-6?

GHRP-6 is a synthetic 6-amino-acid peptide with the sequence His-D-Trp-Ala-Trp-D-Phe-Lys-NH2, disclosed by Cyril Y. Bowers and Frank Momany and colleagues at Tulane University in the late 1980s as the first peptidic compound capable of stimulating growth hormone release through a mechanism distinct

from growth hormone-releasing hormone (GHRH) [bowers1990, bowers1991_action]. GHRP-2, also known as pralmorelin or KP-102, is a structurally related synthetic hexapeptide with the sequence D-Ala-D-2-Nal-Ala-Trp-D-Phe-Lys-NH2 designed to improve on GHRP-6's potency.

Both peptides are synthetic and were never isolated from a natural source. Their design preceded by roughly a decade the cloning of the growth hormone secretagogue receptor (GHS-R1a) by Howard et al. (Science, 1996) [howard1996] and the discovery of the endogenous receptor ligand, ghrelin, by Kojima et al. (Nature, 1999) [kojima1999]. The history of how GHRP-6 and GHRP-2 led to the broader ghrelin-GHS axis is reviewed by Bowers in Methods in Enzymology [bowers2012_history].

Neither GHRP-2 nor GHRP-6 has received FDA marketing authorization. GHRP-2 (under the trade name GHRP Kaken 100, Kaken Pharmaceutical) is licensed in Japan as a diagnostic test for adult growth hormone deficiency; this is not an FDA-recognized status. GHRP-6 was never developed into a commercial product. In published clinical studies these peptides have been administered intravenously, subcutaneously, intranasally [hayashi1991], and orally [ghigo1994_eje, ghigo1994_invest]; there is no FDA-approved formulation, route, or dose for either substance.

How GHRP-2 / GHRP-6 Works

GHRP-2 and GHRP-6 are agonists at the growth hormone secretagogue receptor type 1a (GHS-R1a), the same Gαq/11-coupled G-protein-coupled receptor activated by endogenous ghrelin [howard1996, kojima1999]. GHS-R1a is expressed on anterior pituitary somatotrophs, in the hypothalamic arcuate nucleus, in the area postrema, on vagal afferents, and in the enteric nervous system. Agonist binding activates phospholipase C, generates inositol trisphosphate and diacylglycerol, releases intracellular calcium, and triggers vesicular release of pre-formed growth hormone from somatotrophs.

Unlike the later selective pentapeptide ipamorelin, which releases GH without significantly elevating prolactin, ACTH, cortisol, FSH, or LH at GH-releasing doses [raun1998], GHRP-2 and GHRP-6 are non-selective. Korbonits et al. (1995, 1999) [korbonits1995, korbonits1999] demonstrated that GHRPs (and the structurally related hexarelin) trigger ACTH and cortisol release through hypothalamic mechanisms partially modulated by opioid pathways; Kano et al. (2010) [kano2010] established that the pituitary-adrenal response to GHRP-2 stimulation is sufficient to function as a clinical adrenal-reserve test comparable to the insulin tolerance test. Prolactin elevation accompanies GH release at clinically effective doses.

A second distinguishing feature of GHRP-6 in particular is appetite stimulation. Wren et al. (2001) [wren2001] demonstrated that intravenous ghrelin increases food intake in healthy adults; Laferrère and colleagues (2005, 2006) [laferrere2005, laferrere2006] showed that GHRP-2, and by implication other non-selective GHRPs including GHRP-6, replicates this central ghrelin-receptor effect in healthy and obese adults, producing measurable increases in self-reported hunger and ad-libitum food intake. This

pharmacology is the mechanistic basis for the broad clinical interest in GHS-R1a agonists for cancer cachexia and for the widespread (and unregulated) recreational use of GHRP-6 as an appetite stimulant.

Biological Role of GHRP-2 / GHRP-6

Growth hormone secretion from anterior pituitary somatotrophs is regulated by a balance of stimulatory GHRH and inhibitory somatostatin from the hypothalamus, modulated by feedback from peripheral IGF-1 and by neuroendocrine inputs reflecting nutrient state, stress, and circadian phase. Endogenous ghrelin, secreted predominantly from oxyntic cells of the stomach in response to fasting, signals nutrient deficit, amplifies pulsatile pituitary GH release, and stimulates appetite through hypothalamic arcuate-nucleus circuits [kojima1999, wren2001].

Synthetic growth hormone-releasing peptides (GHRPs) were the pharmacological tools that motivated the discovery of this axis. Bowers and Momany designed the first GHRPs in the late 1970s and early 1980s from a met-enkephalin scaffold, ultimately disclosing GHRP-6 as a robust synthetic GH secretagogue [bowers1990, bowers1991_action]. GHRP-2 (pralmorelin) was developed as a more potent successor. These peptides demonstrated that growth hormone release could be triggered by a non-GHRH pharmacology, the receptor for which (GHS-R1a) was identified by Howard et al. in 1996 [howard1996], and the endogenous ligand for that receptor (ghrelin) was identified shortly afterward by Kojima et al. [kojima1999]. GHRP-6 and GHRP-2 are therefore historically important: they are the synthetic forebears of the modern ghrelin literature, the orally bioavailable GHS-R1a agonist anamorelin (approved in Japan for cancer cachexia), and selective successor peptides such as ipamorelin [raun1998].

Detailed Mechanism of GHRP-2 / GHRP-6

GHS-R1a was identified by Howard, Smith, Van der Ploeg and colleagues at Merck in 1996 [howard1996] using a class of synthetic small-molecule growth hormone secretagogues (the MK-0677 series) developed in parallel with the Bowers GHRP peptide work. The receptor was orphan until Kojima, Hosoda, Date, Kangawa and colleagues identified the endogenous ligand, ghrelin, a 28-amino-acid octanoyl-modified peptide produced predominantly by oxyntic cells of the stomach, in 1999 [kojima1999]. Endogenous ghrelin signals nutrient state, amplifies pulsatile pituitary GH release, and drives appetite. GHRP-6 and GHRP-2 were the synthetic pharmacological tools that motivated the receptor hunt; the history of this lineage from the late-1970s met-enkephalin scaffold work through the modern ghrelin literature is reviewed by Bowers [bowers2012_history].

GH release mechanism. In healthy adults, single intravenous or intranasal doses of GHRP-2 produce dose-dependent GH peaks within minutes [tiulpakov1995_clinendo, hayashi1991]. The response is partially synergistic with GHRH co-administration [bowers1990]: combined GHRH plus GHRP achieves larger GH peaks than either compound alone, indicating partially independent mechanisms. Bitar et al. (1991)

[bowers1991_substancep] tested substance-P/bombesin antagonists on GHRP- and GHRH-induced GH release, supporting separable hypothalamic and pituitary contributions to the GHRP response. Gondo et al. (2001) [gondo2001] demonstrated that GHRP-2 stimulates GH secretion in patients with biallelic mutations of the GHRH receptor that abolish responses to GHRH itself, establishing that GHS-R1a activation drives GH release independently of the GHRH axis.

Non-GH pituitary effects. Korbonits and colleagues (1995, 1999) [korbonits1995, korbonits1999] characterized the cortisol, ACTH, and prolactin responses to GHRPs and the related compound hexarelin in adult human subjects and in rat hypothalamic explant preparations. The cortisol/ACTH response is partially mediated by hypothalamic vasopressin and CRH release, partially modulated by endogenous opioid tone (an opiate antagonist attenuates the response [korbonits1995]), and is sufficient at clinically active doses to support a diagnostic-test application: Kano et al. (2010) [kano2010] reported that the pituitary-adrenal response to a GHRP-2 challenge is comparable to the insulin tolerance test for adrenal reserve, with practical advantages of avoiding induced hypoglycemia. Prolactin elevation is a consistent feature of GHRP-2 and GHRP-6 testing at GH-releasing doses; this is the primary pharmacological distinction from ipamorelin [raun1998].

Central appetite and metabolic effects. GHRP-6 was historically the first synthetic GHS-R1a agonist linked to hunger stimulation in animal models. The mechanism is consistent with subsequent work on endogenous ghrelin: Wren et al. (2001) [wren2001] demonstrated that intravenous ghrelin in healthy adults increased ad-libitum food intake by approximately 28% at a meal offered 1 hour after infusion. Laferrère, Bowers and colleagues (2005, 2006) [laferrere2005, laferrere2006] extended this work to GHRP-2 specifically in healthy and obese adults, showing dose-dependent increases in hunger ratings and ad-libitum caloric intake. The hypothalamic arcuate-nucleus mechanism, activation of NPY/AgRP-expressing neurons by GHS-R1a, was characterized in parallel preclinical work. This pharmacology is the basis of clinical interest in GHS-R1a agonism for cancer cachexia (now pursued via the orally bioavailable anamorelin) and of recreational use of GHRP-6 as an appetite stimulant.

Pharmacokinetics. Detailed PK data are limited to short studies in pediatric and adult populations. Pihoker et al. (1998) [pihoker1998] reported the pharmacokinetics and pharmacodynamics of GHRP-2 in children, supporting rapid absorption after intranasal dosing and a short plasma half-life consistent with a small unmodified peptide. Oral GHRP-6 was characterized by Ghigo and colleagues in normal aging and elderly subjects with arginine co-administration [ghigo1994_eje, ghigo1994_invest]. There is no published modern population PK analysis, no immunogenicity data, no chronic-dosing PK, and no covariate analysis for renal or hepatic function for either substance.

GHRP-2 / GHRP-6 Research History

GHRP-6 was disclosed by Bowers, Reynolds, Durham, Barrera, Pezzoli and Thorner in 1990 [bowers1990] as a synthetic hexapeptide that stimulates GH release in normal adult men and acts synergistically with

GHRH. Bowers, Sartor, Reynolds and Badger (Endocrinology, 1991) [bowers1991_action] characterized the in vivo pharmacology of GHRP in rodents and primates, establishing GH-releasing potency, route effects, and combination behavior with GHRH. Bitar, Bowers and Coy (1991) [bowers1991_substancep] tested substance-P/bombesin antagonists on GHRP-induced GH release. Hayashi and colleagues (1991) [hayashi1991] reported the first intranasal administration of GHRP in normal men, demonstrating that intranasal dosing produced measurable plasma GH and IGF-1 elevations.

GHRP-2 was developed as a more potent successor and characterized in adults and children through the mid-1990s. Tiulpakov, Brook, Pringle, Peterkova, Volevodz and Bowers (1995) [tiulpakov1995_clinendo] reported GH responses to intravenous bolus GHRH and GHRP-2 separately and in combination in adult volunteers. Pihoker, Middleton, Reynolds, Bowers and Badger (1995) [pihoker1995] published the first dedicated pediatric study of GHRP-2 in children of short stature, both intravenous and intranasal administration. Tiulpakov and colleagues (1995, Metabolism) [tiulpakov1995_metab] characterized GH-releasing effects of GHRP-2 and GHRH(1-29)NH2 in children with GH insufficiency and idiopathic short stature. Pihoker and colleagues subsequently reported pharmacokinetics and pharmacodynamics of GHRP-2 in children (1998) [pihoker1998] and treatment effects of intranasal GHRP-2 in short-stature children (1997) [pihoker1997]. Mericq, Cassorla, Salazar, Avila, Iñiguez, Bowers and Merriam (1998) [mericq1998] reported eight-month treatment effects of graded GHRP doses in GH-deficient children.

Mechanistic and adult-physiology work continued in parallel. Ghigo, Arvat, Rizzi and colleagues (1994) reported GHRP-6 effects after short-term oral pretreatment in normal aging [ghigo1994_eje] and arginine augmentation of oral GHRP-6 in elderly subjects [ghigo1994_invest]. Korbonits, Trainer and Besser (1995) [korbonits1995] established that an opiate antagonist attenuates the hormonal response to hexarelin (and by extension to other GHRPs), and Korbonits, Little, Forsling and colleagues (1999) [korbonits1999] characterized GHRP and neuropeptide-Y effects on hypothalamic hormone release in rat explants. Gondo, Aguiar-Oliveira, Bowers and colleagues (2001) [gondo2001] showed that GHRP-2 stimulates GH secretion in adults with biallelic GHRH-receptor mutations, the cleanest in vivo demonstration that GHS-R1a-mediated GH release is independent of the GHRH axis.

The discovery of the ghrelin receptor by Howard, Feighner, Cully, Van der Ploeg, Smith and colleagues at Merck (1996) [howard1996] and of endogenous ghrelin by Kojima, Hosoda, Date, Nakazato, Matsuo and Kangawa (1999) [kojima1999] redefined the therapeutic landscape. With the endogenous axis now characterized, clinical development of non-selective GHRP-6 stopped: selective successor peptides (ipamorelin, NNC 26-0161 [raun1998]) and orally bioavailable small-molecule agonists (ibutamoren/MK-0677; anamorelin) were pursued instead [rahman2026]. GHRP-2 survived only as a diagnostic agent: Kano et al. (2010) [kano2010] characterized the pituitary-adrenal response to GHRP-2 as comparable to the insulin tolerance test for adult adrenal-reserve assessment, supporting the diagnostic-product status of pralmorelin (GHRP Kaken 100) in Japan. The food-intake pharmacology characterized by Wren et al. for ghrelin [wren2001] and by Laferrère, Bowers and colleagues for GHRP-2 [laferrere2005, laferrere2006] reinforced the cancer-cachexia rationale that ultimately moved to anamorelin clinically. Bowers' own

retrospective on the history of these compounds was published in Methods in Enzymology [bowers2012_history].

Practitioner-facing and doping-control literature continued through the 2010s and 2020s. Okano, Sato, Ikekita and Kageyama (2010) [okano2010] published a validated LC-MS/MS method for detection of pralmorelin (GHRP-2) and its primary metabolite in human urine, supporting WADA enforcement of the prohibition on GH-secretagogue use in sport. Sigalos and Pastuszak (2018) [sigalos2018] published a class-level safety and efficacy review of growth hormone secretagogues, and Sigalos et al [mendias2026; sinha2020]. (2017) [sigalos2017] reported that GH-secretagogue treatment in hypogonadal men raised IGF-1, both papers documenting the off-label men's-health context in which GHRP-2 in particular continues to be used. Krug et al. (2018) [krug2018] and Gajda et al. (2019) [gajda2019] analyzed seized black-market growth-hormone-releasing peptide products, documenting identity, purity, and labeling discrepancies in the unregulated supply chain through which GHRP-2 and GHRP-6 are typically sold [mayfield2026; coutinho2026]. Recent practitioner-facing reviews catalog the broader unregulated-peptide-market concerns specific to GHRP-class products.

GHRP-2 / GHRP-6 Timeline

Late 1970s, early 1980s • Bowers and Momany develop the first synthetic peptidic growth hormone secretagogues from a met-enkephalin scaffold at Tulane University, the lineage that produces GHRP-6 and GHRP-2

1990 • Bowers et al [bowers1990]. (J Clin Endocrinol Metab) publish the first adult-human characterization of GHRP-6, synergy with GHRH and dose-dependent GH release in normal men

1991 • Bowers, Sartor, Reynolds and Badger (Endocrinology) characterize the in vivo actions of GHRP-6 across species; Bitar/Bowers/Coy test substance-P/bombesin antagonists on GHRP-induced GH release; Hayashi et al [bowers1991_action; bowers1991_substancep; hayashi1991]. (Endocrinol Jpn) report intranasal GHRP administration in normal men

1994 • Ghigo, Arvat and colleagues (Eur J Endocrinol; J Endocrinol Invest) characterize oral GHRP-6 in normal aging and arginine-augmented oral GHRP-6 in elderly subjects [ghigo1994_eje; ghigo1994_invest]

1995 • Tiulpakov, Brook, Pringle, Bowers and colleagues (Clin Endocrinol) characterize combined GHRH + GHRP-2 in adult volunteers; Pihoker et al [tiulpakov1995_clinendo]. (J Clin Endocrinol Metab) publish the first pediatric IV and intranasal GHRP-2 study in children of short stature; Tiulpakov et al [pihoker1995; tiulpakov1995_metab; korbonits1995]. (Metabolism) report GH responses to GHRP-2 and GHRH in children with GH insufficiency; Korbonits, Trainer and Besser (Clin Endocrinol) demonstrate opiate-antagonist attenuation of GHRP/hexarelin hormonal responses

1996 • Howard et al [howard1996]. (Science) clone the growth hormone secretagogue receptor (GHS-R1a) using the synthetic GHRP/MK-0677 secretagogue series as the discovery pharmacology

1997 • Pihoker, Badger, Reynolds (J Endocrinol) publish treatment effects of intranasal GHRP-2 in short-stature children [pihoker1997]

1998 • Pihoker, Kearns, French (J Clin Endocrinol Metab) characterize pharmacokinetics and pharmacodynamics of GHRP-2 in children; Mericq et al [pihoker1998]. (J Clin Endocrinol Metab) report eight-month effects of graded GHRP doses in GH-deficient children; Raun et al [mericq1998; raun1998]. (Eur J Endocrinol) disclose ipamorelin as the first selective growth hormone secretagogue, establishing the comparison standard against which GHRP-2 and GHRP-6's non-selective profile is defined

1999 • Kojima, Hosoda, Date, Nakazato, Matsuo, Kangawa (Nature) identify ghrelin as the endogenous octanoyl-modified peptide ligand of GHS-R1a, the discovery that ends clinical development of non-selective GHRP-6 and redefines the field; Korbonits et al [kojima1999; korbonits1999]. (J Neuroendocrinol) characterize GHRP and neuropeptide-Y effects on hypothalamic hormone release

2001 • Wren et al. (J Clin Endocrinol Metab) demonstrate that intravenous ghrelin enhances appetite and food intake in healthy adults, the mechanistic foundation for the GHRP-6 hunger effect; Gondo et al [wren2001; gondo2001]. (J Clin Endocrinol Metab) show that GHRP-2 stimulates GH secretion in patients with mutated GHRH receptor

2005 • Laferrère, Abraham, Russell (J Clin Endocrinol Metab) report that GHRP-2 increases food intake in healthy men, replicating the ghrelin appetite effect [laferrere2005]

2006 • Laferrère, Hart, Bowers (Obesity) demonstrate that obese adults respond to the GHRP-2 appetite-stimulating effect [laferrere2006]

2010 • Okano, Sato, Ikekita, Kageyama (Rapid Commun Mass Spectrom) publish a validated urine LC-MS/MS method for pralmorelin (GHRP-2) and its metabolite for anti-doping detection; Kano et al [okano2010; kano2010]. (Peptides) characterize the pituitary-adrenal response to GHRP-2 testing as comparable to the insulin tolerance test for adrenal-reserve assessment

2012 • Bowers (Methods in Enzymology) publishes a retrospective on the history of the discovery of ghrelin, tracing GHRP-6 and GHRP-2 as the synthetic forebears of the modern field [bowers2012_history]

2017, 2018 Sigalos and Pastuszak (Sexual Medicine Reviews) publish a class-level safety and efficacy review of growth hormone secretagogues; Sigalos et al [sigalos2018; sigalos2017]. (Am J Mens Health) report IGF-1 elevation with GH-secretagogue treatment in hypogonadal men, documenting the off-label men's-health context for GHRP-2

2018, 2019 Krug et al. (Growth Horm IGF Res) and Gajda et al [krug2018; gajda2019]. (Drug Test Anal) publish analytical characterization of seized black-market growth-hormone-releasing peptide products, documenting identity, purity, and labeling discrepancies in the unregulated supply chain

2025 • World Anti-Doping Agency Prohibited List confirms GHRP-2 (pralmorelin) and GHRP-6 remain prohibited at all times under section S2 (peptide hormones, growth factors, related substances and mimetics, growth hormone secretagogues) [wada_prohibited_list_2025]

2026 • Practitioner-facing reviews on therapeutic peptides in sports medicine, orthopaedics, and gerontology continue to flag GHRP-2 and GHRP-6 as lacking FDA approval and as widely sold in unregulated wellness and bodybuilding markets [mendias2026; mayfield2026; rahman2026; coutinho2026]

Clinical Contexts for GHRP-2 / GHRP-6

Adult growth hormone deficiency, diagnostic stimulation testing EMERGING

GHRP-2 has been characterized as a stimulation-test agent for adult GH deficiency and adrenal reserve. Licensed in Japan as GHRP Kaken 100; not FDA-approved.

Tiulpakov et al. (1995) [tiulpakov1995_clinendo] characterized combined GHRH + GHRP-2 stimulation in adult volunteers. Kano et al. (2010) [kano2010] demonstrated that the pituitary-adrenal response to a GHRP-2 challenge is comparable to the insulin tolerance test for adrenal reserve assessment, with practical advantages of avoiding induced hypoglycemia. Gondo et al. (2001) [gondo2001] showed GHRP-2-stimulated GH release is preserved in adults with biallelic GHRH-receptor mutations, establishing GHS-R1a-mediated release as independent of the GHRH axis. GHRP-2 is licensed in Japan as GHRP Kaken 100 (Kaken Pharmaceutical) for adult GH-deficiency diagnostic testing; this is a non-U.S. regulatory status and not FDA-recognized.

Pediatric short stature / growth hormone deficiency EMERGING

Studied in small pilot pediatric trials in the 1990s; no phase 3 program; not an approved indication anywhere.

Pihoker, Middleton, Reynolds, Bowers, Badger (1995) [pihoker1995] published the first dedicated pediatric study of intravenous and intranasal GHRP-2 in children of short stature, with measurable GH peaks. Tiulpakov et al. (1995) [tiulpakov1995_metab] characterized GH responses to GHRP-2 and GHRH(1-29)NH2 in children with GH insufficiency and idiopathic short stature. Pihoker et al. (1997, 1998) [pihoker1997, pihoker1998] reported intranasal treatment effects in short-stature children and pediatric pharmacokinetics/pharmacodynamics. Mericq et al. (1998) [mericq1998] reported eight-month treatment effects of graded GHRP doses in GH-deficient children. No controlled-trial program advanced to phase 3; recombinant human growth hormone remained the standard of care for pediatric GHD.

Appetite stimulation / cachexia rationale EMERGING

Mechanistic and proof-of-concept human studies established the appetite-stimulating effect of GHRP-2 and GHRP-6; clinical development of the indication moved to the orally bioavailable agonist anamorelin (Adlumiz, Japan).

Wren et al. (2001) [wren2001] demonstrated that intravenous ghrelin increased ad-libitum food intake by ~28% in healthy adults. Laferrère, Abraham, Russell (2005) [laferrere2005] showed that GHRP-2, like ghrelin, increased food intake in healthy men; Laferrère, Hart, Bowers (2006) [laferrere2006] extended the result to obese adults. GHRP-6 was historically the synthetic compound most clearly linked to hunger stimulation in animal models. The clinical indication of cancer cachexia ultimately moved to the orally bioavailable GHS-R1a agonist anamorelin (approved in Japan for cancer cachexia); GHRP-2 and GHRP-6 development for this indication did not advance to phase 3.

Off-label men's-health / IGF-1 elevation in hypogonadism EMERGING

A men's-health clinical literature has characterized GH-secretagogue use in hypogonadal men with IGF-1 elevation; no FDA approval; not endorsed by RonanRx.

Evidence should be interpreted in context for GHRP-2 and GHRP-6. Any patient-specific request requires prescriber rationale and pharmacy review; availability is determined case by case.

Anti-aging / body composition / wellness use (unregulated) EMERGING

Widely promoted by anti-aging and wellness clinics outside the regulated 503A pathway. No FDA approval, no controlled clinical evidence in healthy adults for these uses, and on FDA's Category 2 list as bulk substances ineligible for 503A compounding.

Evidence should be interpreted in context for GHRP-2 and GHRP-6. Any patient-specific request requires prescriber rationale and pharmacy review; availability is determined case by case.

Compounded GHRP-2 / GHRP-6 (503A)

Physicians may submit patient-specific prescription requests for pharmacy review. For GHRP-2 and GHRP-6, certain preparations may be available now when clinically appropriate, lawfully prescribed, and approved by the dispensing pharmacy. Availability is determined case by case and may depend on patient-specific documentation, ingredient status, source qualification, formulation feasibility, state requirements, and pharmacist judgment. The review starts with the evidence constraint: The evidence base for GHRP-2 and GHRP-6 includes older endocrine studies showing growth-hormone release, but that is not the same as an FDA-approved therapeutic program. Safety, dosing, and off-label use remain constrained by the limited clinical record.

This ingredient is part of an evolving FDA review process. RonanRx is monitoring FDA's PCAC process and any subsequent agency action. These ingredients are part of an evolving FDA review process for peptide-

related bulk substances used in compounding. Availability may change after FDA review, PCAC discussion, final agency action, or state-board guidance. For GHRP-2 and GHRP-6, RonanRx ties that monitoring to the evidence limits described above and to any patient-specific documentation submitted by the prescriber.

Valid patient-specific prescription required. Supporting clinical rationale may be requested. Compounded medications are not FDA-approved. No consumer self-ordering, no office stock, no bulk dispensing. Requests for GHRP-2 and GHRP-6 are reviewed before any preparation is made or released. A physician-submitted request is the regulated alternative to research-peptide supply. It requires patient-specific rationale and pharmacist review rather than a consumer choosing a GH-secretagogue from an online menu.

GHRP-2 / GHRP-6 Formulations and Routes

Form	Concentration	Description
Investigational injectable (historical)	—	Used as intravenous and subcutaneous solutions in published phase 1 and phase 2 studies [bowers1990, tiulpakov1995_clinendo, pihoker1995, pihoker1998]. No FDA-approved commercial pharmaceutical formulation exists.
Investigational intranasal solution (historical)	—	Used in intranasal-administration studies in adults and children [hayashi1991, pihoker1995, pihoker1997]. No FDA-approved intranasal product exists.
Investigational oral preparation (historical)	—	Oral GHRP-6 was studied by Ghigo and colleagues in normal aging and with arginine co-administration [ghigo1994_eje, ghigo1994_invest]. Oral bioavailability of unmodified GHRP peptides is low.
Pralmorelin diagnostic injection (Japan only, not from RonanRx)	—	GHRP Kaken 100 (Kaken Pharmaceutical) is licensed in Japan as a diagnostic test for adult growth hormone deficiency. This is a non-U.S. regulatory status and is not FDA-approved. RonanRx does not source, dispense, or endorse this product.
Unregulated bulk powder / reconstituted injection (not from RonanRx)	—	Widely available from online research-chemical sellers and anti-aging clinics outside the 503A regulated pathway. Analytical characterization of seized products documents identity and purity discrepancies [krug2018, gajda2019]. RonanRx does not source, dispense, or endorse these products.

Routes used in published literature: intravenous, subcutaneous, intranasal, oral.

GHRP-2 / GHRP-6 Dosing

Route	Population	Range	Duration	Study type
Intravenous (research only)	Adult volunteers (Bowers 1990 and Tiulpakov 1995 stimulation testing)	Single IV bolus doses of 1 µg/kg GHRP-6 [bowers1990] and 1 µg/kg GHRP-2 [tiulpakov1995_clinendo] were studied; doses produced dose-dependent GH peaks within minutes. No FDA-approved therapeutic dose has ever been established.	Single dose in PK/PD studies	Phase 1 PK/PD in healthy adults
Intranasal (research only)	Adult volunteers and children with short stature	Intranasal GHRP doses studied in published pediatric trials [pihoker1995, pihoker1997, pihoker1998] and adult-volunteer studies [hayashi1991]; doses were established empirically per trial protocol and are not labeled clinical doses.	Single dose to several weeks in published research	Phase 1/2 in adults and children
Oral (research only, GHRP-6)	Normal aging and elderly subjects	Oral GHRP-6 was studied by Ghigo and colleagues; oral bioavailability is low. No FDA-approved oral dose exists.	Short-term oral pretreatment in published research	Mechanistic / clinical pharmacology

No FDA-approved labeled dose exists for GHRP-2 or GHRP-6. The published human dosing literature is limited to single-dose stimulation testing in adults and short-course pediatric pilot trials in short stature and GH deficiency [pihoker1995; pihoker1997; tiulpakov1995_metab]. Clinical development was discontinued in the late 1990s and early 2000s following the discovery of ghrelin and the GHS receptor [howard1996, kojima1999], which redirected the field to selective successor peptides (ipamorelin) and orally bioavailable small molecules (anamorelin, ibutamoren) [pihoker1998].

RonanRx does not publish a consumer dosing schedule for GHRP-2 and GHRP-6. Any request requires a valid patient-specific prescription, supporting clinical rationale, and pharmacist review. Route, strength, dosing interval, monitoring expectations, and dispensing quantity would be determined case by case from the prescriber's documentation and pharmacy feasibility review.

GHRP-2 / GHRP-6 Safety

The published human safety record for GHRP-2 and GHRP-6 is limited to single-dose stimulation testing in adults and short-course pediatric pilot trials. Bowers et al. (1990) [1] and Tiulpakov et al. (1995) [7] reported

intravenous GHRP-6 and GHRP-2 in healthy adult volunteers with transient flushing, mild nausea, and a sensation of hunger (particularly with GHRP-6) as the main acute adverse effects. Pihoker and colleagues [9][12][13] and Mericq et al. (1998) [14] reported short-course pediatric tolerability comparable to placebo for the limited GH-release assessment context. There are no published long-term human safety data, no chronic-dosing pharmacovigilance, no published carcinogenicity assessment in humans, and no published immunogenicity data for either peptide [30][31][33].

Distinguishing pharmacology vs ipamorelin: cross-axis activation. The defining safety distinction of GHRP-2 and GHRP-6 relative to the selective successor pentapeptide ipamorelin [15] is non-selective pituitary pharmacology. At GH-releasing doses, both GHRP-2 and GHRP-6 elevate prolactin, ACTH, and cortisol [10][17][23]. The cortisol/ACTH response is sufficient at clinically active doses to function as a diagnostic adrenal-reserve test [23], but in a therapeutic context this constitutes unwanted cross-axis stimulation [32]. Prolactin elevation accompanies GH release. These effects argue against chronic GHRP-2 or GHRP-6 dosing in any patient population in which cortisol or prolactin elevation would be clinically undesirable.

Distinguishing pharmacology: appetite. GHRP-6 in particular, and GHRP-2 by direct demonstration [20][21], engages the central ghrelin-receptor circuits that drive hunger. In healthy adults, both peptides increase self-reported hunger and ad-libitum food intake, paralleling endogenous ghrelin [18]. In a patient population in which weight gain is undesired this is a meaningful AE; in chronic uncontrolled use it represents a known mechanism for caloric overconsumption.

Class-level safety considerations for chronic GHS-R1a agonism extrapolated from the broader GH-releasing peptide and growth-hormone-axis literature: GH/IGF-1 elevation has known associations with insulin resistance, fluid retention, carpal tunnel symptoms, arthralgia, and (in the recombinant human GH literature) theoretical concerns regarding promotion of pre-existing malignancy. Sigalos and Pastuszak (2018) [26] reviewed the class-level safety literature for GH secretagogues including GHRP-2 and concluded that the evidence base is insufficient to characterize long-term safety; Sigalos et al [29]. (2017) [25] documented IGF-1 elevation with off-label GH-secretagogue treatment in hypogonadal men. None of these signals has been formally evaluated for GHRP-2 or GHRP-6 in a phase 3 controlled trial.

Unregulated-supply-chain safety is a separate question. Analytical characterization of seized black-market growth-hormone-releasing peptide products [27][28] has documented identity, dose, and purity discrepancies, including misidentified peptides, contamination with related secretagogues, and labels that do not match analytical content. Practitioner-facing reviews catalog these supply-chain risks specifically for the unregulated peptide market in which GHRP-2 and GHRP-6 are widely sold.

Anti-doping status. Both peptides are on the WADA Prohibited List at all times under section S2 [36]; a validated urine LC-MS/MS detection method for pralmorelin (GHRP-2) and its metabolite is published [22]. Athletes subject to testing should not use GHRP-2 or GHRP-6 regardless of source.

Contraindications

Honest gap. No FDA-approved label exists for GHRP-2 or GHRP-6 and no formal contraindications have been established in peer-reviewed clinical literature. Class-level cautions applicable to growth hormone secretagogues, active malignancy, severe insulin resistance or uncontrolled diabetes, hyperprolactinemia, hypercortisolism / Cushing's syndrome, pregnancy and lactation, and pediatric use outside dedicated trials, are noted in safety_overview but are extrapolations, not labeled contraindications.

Searched: PubMed, FDA Drugs, WADA on 2026-05-11 · terms *GHRP-2 contraindications; pralmorelin contraindications; GHRP-6 contraindications; ghrelin agonist contraindications*.

Drug interactions

Honest gap. No FDA-approved label and no formal drug-interaction studies have been published for either GHRP-2 or GHRP-6. As small peptides cleared by proteolytic catabolism rather than CYP-mediated metabolism, clinically significant CYP-based drug-drug interactions are not anticipated. Mechanistically expected interactions include opioid co-administration (an opiate antagonist attenuated the hormonal response to hexarelin in Korbonits 1995) and additive cortisol-elevating effects with other corticotrope stimulants, neither formally evaluated.

Searched: PubMed, FDA Drugs, DailyMed on 2026-05-11 · terms *GHRP-2 drug interactions; pralmorelin drug interactions; GHRP-6 drug interactions; ghrelin agonist co-administration*.

Adverse events

Adverse-event data for GHRP-2 and GHRP-6 in humans are limited to the historical stimulation-testing and pediatric pilot literature. Acute adverse effects with single-dose intravenous administration include transient flushing, mild nausea, headache, and, particularly with GHRP-6, a clinically recognizable sensation of hunger [17][20]. Cross-axis hormone effects at GH-releasing doses, elevation of prolactin, ACTH, and cortisol, are pharmacologically intrinsic to these non-selective peptides [10][17][23] and distinguish them from the selective successor ipamorelin [15].

Pediatric short-course tolerability in the Pihoker and Mericq studies was reported as acceptable for the stimulation-test or short-course-treatment context evaluated; these datasets do not extrapolate to chronic adult dosing for body-composition or anti-aging indications, for which no controlled-trial AE data exist [9][12][13]. Sigalos and Pastuszak's 2018 class-level safety review [26] concluded that the long-term safety evidence base for GH secretagogues including GHRP-2 is insufficient to support generalized off-label use.

There is no published large-population safety dataset, no chronic-dosing pharmacovigilance data, and no published immunogenicity analysis for either peptide [14]. Adverse events reported by patients using unregulated supply-chain GHRP-2 or GHRP-6 do not enter formal pharmacovigilance systems for non-approved products; the analytical literature on seized black-market peptides [27][28] documents identity and dose discrepancies that confound any attempt to attribute symptoms to a labeled dose.

Monitoring GHRP-2 / GHRP-6 Therapy

No RonanRx-specific monitoring protocol has been established for GHRP-2 and GHRP-6. If a patient-specific prescription is submitted, supporting clinical rationale may be requested, and monitoring expectations would be reviewed case by case against the published evidence, route, sterile or nonsterile status, concomitant therapies, and patient risk factors.

GHRP-2 / GHRP-6 in Special Populations

GHRP-2 / GHRP-6 Evidence Quality

The evidence base for GHRP-2 and GHRP-6 is older and structurally narrow. Discovery and adult-human characterization were published primarily between 1990 and 1995 [coutinho2026]. Pediatric pilot studies in short-stature and GH-deficiency populations were published in the 1990s but were not followed by phase 3 programs [pihoker1995; pihoker1998; krug2018]. The pivotal mechanistic events of the field, cloning of GHS-R1a [howard1996] and identification of ghrelin [kojima1999], redefined the therapeutic landscape and ended development of non-selective GHRP-6; selective successor peptides (ipamorelin [raun1998]) and orally bioavailable small molecules (anamorelin, ibutamoren) absorbed the clinical-development effort.

GHRP-2 survives in active use only in two narrow contexts: (1) a diagnostic stimulation-test agent for adult GH deficiency and adrenal reserve, supported by Kano et al [tiulpakov1995_clinendo; mayfield2026; rahman2026]. (2010) [kano2010] and Gondo et al [gajda2019; mendias2026]. (2001) [gondo2001], and licensed in Japan as GHRP Kaken 100, not an FDA-recognized status; and (2) off-label men's-health use documented in the Sigalos and Pastuszak literature [sigalos2017, sigalos2018, sinha2020] without controlled-trial support. The food-intake pharmacology of GHRP-2 and GHRP-6 has been characterized in healthy and obese adults [laferrere2005, laferrere2006, wren2001] and motivates the cancer-cachexia rationale that ultimately moved clinically to anamorelin.

Regulatory: neither GHRP-2 nor GHRP-6 has received FDA or EMA marketing authorization [ghigo1994_invest]. FDA has placed both substances on its Category 2 list of bulk drug substances nominated for 503A compounding, substances with significant safety concerns that remain under FDA's significant-safety-risk framework [fda_503a_interim_policy] [ghigo1994_eje; korbonits1995]. Physicians may submit patient-specific prescription requests for pharmacy review. Availability is determined case by case. Both are on the WADA Prohibited List at all times [wada_prohibited_list_2025], and a validated detection method for pralmorelin (GHRP-2) is published [okano2010] [bowers1990]. The unregulated wellness-clinic and online-research-chemical market for these peptides is documented as carrying identity and purity risk [tiulpakov1995_metab; pihoker1997; mericq1998].

Major GHRP-2 / GHRP-6 Clinical Studies

Study	Design	Participants	Duration	Finding
Bowers et al. (1990, J Clin Endocrinol Metab), GHRP-6 first adult-human characterization	Single-dose intravenous GHRP-6 vs GHRH and combination in normal adult men; GH-response endpoints	—	—	Dose-dependent GH release with GHRP-6 in normal adult men; synergistic GH release with combined GHRP-6 + GHRH, established the basis for the broader GHRP-GHS axis [bowers1990]
Bowers, Sartor, Reynolds, Badger (1991, Endocrinology), Actions of GHRP hexapeptide	Preclinical and translational pharmacology of GHRP-6 across species; route, dose, and combination characterization	—	—	Characterized GH-releasing pharmacology of GHRP-6 across species; supported route flexibility (IV, IM, SC, intranasal, oral) with route-dependent potency [bowers1991_action]
Hayashi et al. (1991, Endocrinol Jpn), Intranasal GHRP	Open-label intranasal GHRP administration in normal adult men; plasma GH and IGF-1 endpoints	—	—	Intranasal administration produced measurable plasma GH and IGF-1 elevations, proof-of-concept for non-injectable route [hayashi1991]
Ghigo et al. (1994, Eur J Endocrinol; J Endocrinol Invest), Oral GHRP-6 in aging	Clinical pharmacology studies of oral GHRP-6 in normal-aging adults and elderly subjects, including arginine co-administration	—	—	Short-term oral GHRP-6 pretreatment maintains GH-releasing activity in normal aging; arginine enhances oral GHRP-6 GH-release in elderly but not young subjects [ghigo1994_eje; ghigo1994_invest]
Tiulpakov et al. (1995, Clin Endocrinol), Adult GHRH + GHRP-2 combination	Single intravenous bolus GHRH and GHRP-2 alone and in combination in adult volunteers	—	—	Synergistic GH release with combined GHRH + GHRP-2 vs either alone in adults; established the diagnostic-test combination paradigm subsequently developed for adult GH deficiency [tiulpakov1995_clinendo]
Pihoker et al. (1995, J Clin Endocrinol	Open-label diagnostic study of intravenous	—	—	GHRP-2 produced measurable GH peaks via both routes; established

Study	Design	Participants	Duration	Finding
Metab), Pediatric IV and intranasal GHRP-2	and intranasal GHRP-2 in children of short stature			the pediatric stimulation-test pharmacology [pihoker1995]
Tiulpakov et al. (1995, Metabolism), Pediatric GHRP-2 in GH insufficiency	Open-label characterization of GH responses to GHRP-2 and GHRH(1-29)NH2 in children with GH insufficiency and idiopathic short stature	—	—	GHRP-2 elicited GH peaks in children with GH insufficiency, supporting the diagnostic-test rationale; not a phase 3 therapeutic program [tiulpakov1995_metab]
Korbonits, Trainer, Besser (1995, Clin Endocrinol), Opiate antagonism of hexarelin response	Effect of naloxone (opiate antagonist) on the hormonal response to intravenous hexarelin in adult subjects	—	—	Opiate antagonism attenuated the cortisol/ACTH/prolactin response to hexarelin, by extension implicating endogenous opioid tone in the cross-axis pituitary response to GHRP-class peptides including GHRP-2 and GHRP-6 [korbonits1995]
Howard et al. (1996, Science), Cloning of GHS-R1a	Molecular biology and pharmacology, identification of the orphan G-protein-coupled receptor activated by the synthetic GHRP/ MK-0677 secretagogue series	—	—	Identified the growth hormone secretagogue receptor (GHS-R1a) in pituitary and hypothalamus, the receptor for GHRP-6, GHRP-2, hexarelin, ipamorelin, and (later identified) endogenous ghrelin [howard1996]
Pihoker et al. (1997, J Endocrinol), Intranasal GHRP-2 treatment in short stature	Treatment-effect study of intranasal GHRP-2 in children with short stature	—	—	Demonstrated GH/IGF-1 effects of intranasal GHRP-2 in short-stature children; not a phase 3 therapeutic program [pihoker1997]
Pihoker et al. (1998, J Clin Endocrinol Metab), Pediatric PK/PD of GHRP-2	Pharmacokinetic and pharmacodynamic characterization of GHRP-2 in children	—	—	Rapid absorption after intranasal dosing; short plasma half-life consistent with small unmodified peptide; dose-dependent GH-response PD [pihoker1998]

Study	Design	Participants	Duration	Finding
Mericq et al. (1998, J Clin Endocrinol Metab), Eight-month GHRP in GH-deficient children	Open-label graded-dose pediatric treatment trial of GHRP in GH-deficient children over 8 months	—	—	Short-course growth and IGF-1 responses with graded GHRP doses in GH-deficient children; clinical development for the pediatric indication did not advance to phase 3 [mericq1998]
Raun et al. (1998, Eur J Endocrinol), Ipamorelin selectivity comparator	Preclinical characterization of the selective pentapeptide GHS-R1a agonist ipamorelin	—	—	Ipamorelin releases GH without significant elevation of prolactin, ACTH, cortisol, FSH, or LH at GH-releasing doses, the comparison standard that defines the non-selective profile of GHRP-2 and GHRP-6 [raun1998]
Kojima et al. (1999, Nature), Ghrelin discovery	Biochemical purification and characterization of the endogenous ligand of GHS-R1a from rat and human stomach	—	—	Identified ghrelin as the endogenous octanoyl-modified peptide that activates GHS-R1a and stimulates GH release; ended clinical development of non-selective GHRP-6 and redefined the GHS axis [kojima1999]
Korbonits et al. (1999, J Neuroendocrinol), Hypothalamic GHRP and NPY effects	Acute rat hypothalamic explant preparations, effect of GH secretagogues and NPY on hypothalamic hormone release	—	—	Characterized the hypothalamic component of the GHRP-induced ACTH/cortisol response, supporting the diagnostic and AE relevance of non-selective GHRP pharmacology [korbonits1999]
Wren et al. (2001, J Clin Endocrinol Metab), Ghrelin enhances appetite in humans	Randomized intravenous ghrelin vs saline in healthy adult volunteers; appetite ratings and ad-libitum food intake at a meal 1 hour after infusion	—	—	Intravenous ghrelin increased ad-libitum food intake by ~28%, the mechanistic foundation for the GHRP-6 hunger effect and the cancer-cachexia rationale that subsequently moved to anamorelin clinically [wren2001]
Gondo et al. (2001, J Clin Endocrinol Metab), GHRP-2 in GHRH-receptor-mutated patients	Open-label IV GHRP-2 stimulation in adults with documented biallelic GHRH-receptor mutations	—	—	GHRP-2 produced GH release in patients with non-functional GHRH receptors, cleanest in vivo demonstration that GHS-R1a-mediated GH release is

Study	Design	Participants	Duration	Finding
	causing isolated GH deficiency			independent of the GHRH axis [gondo2001]
Laferrère et al. (2005, J Clin Endocrinol Metab; 2006, Obesity), GHRP-2 food intake in healthy and obese adults	Randomized GHRP-2 vs placebo in healthy men [laferrere2005] and obese adults [laferrere2006]; appetite ratings and ad-libitum caloric intake	—	—	GHRP-2, like ghrelin, increased hunger ratings and ad-libitum food intake in both healthy and obese adults; pharmacologically establishes the central appetite-stimulating effect of non-selective GHRPs [laferrere2005; laferrere2006]
Okano et al. (2010, Rapid Commun Mass Spectrom), Pralmorelin urine LC-MS/MS	Analytical method development and validation for detection of pralmorelin (GHRP-2) and its primary metabolite in human urine by LC-electrospray ionization tandem mass spectrometry	—	—	Validated detection method supporting WADA anti-doping enforcement for GHRP-2; metabolite profile characterized for routine doping-control laboratories [okano2010]
Kano et al. (2010, Peptides), GHRP-2 adrenal-reserve test	Comparative study of GHRP-2 stimulation vs insulin tolerance test for adult adrenal-reserve assessment	—	—	Pituitary-adrenal response to GHRP-2 was comparable to the insulin tolerance test for adrenal-reserve assessment with practical advantages of avoiding induced hypoglycemia, supports the diagnostic-test product status of pralmorelin in Japan [kano2010]
Sigalos & Pastuszak (2018, Sexual Medicine Reviews), Class safety/efficacy review	Narrative review of the published safety and efficacy literature for growth hormone secretagogues including GHRP-2, GHRP-6, hexarelin, ipamorelin, and anamorelin	—	—	The published evidence base is insufficient to support generalized off-label use of GH secretagogues; long-term human safety data are absent and the field has consolidated around orally bioavailable agents (anamorelin, ibutamoren) and selective successors (ipamorelin), but none of these has FDA approval for

Study	Design	Participants	Duration	Finding
				body-composition or anti-aging use [sigalos2018]
Krug et al. (2018, Growth Horm IGF Res); Gajda et al. (2019, Drug Test Anal), Black-market peptide analyses	Analytical characterization of seized growth-hormone-releasing peptide products from the unregulated supply chain	—	—	Documented identity, purity, and labeling discrepancies in unregulated GHRP products including GHRP-2 and GHRP-6-labeled material, reinforces supply-chain risk for peptides sold outside the regulated 503A pathway [krug2018; gajda2019]

GHRP-2 / GHRP-6 Pharmacokinetics & Pharmacodynamics

Pharmacokinetics

Detailed human PK data are limited. Pihoker et al. (1998) [pihoker1998] reported pediatric pharmacokinetics and pharmacodynamics of GHRP-2, supporting rapid absorption after intranasal dosing and a short plasma half-life consistent with a small unmodified peptide. Adult studies in stimulation-test contexts [bowers1990, tiulpakov1995_clinendo] reported GH peaks within minutes of intravenous administration, with serum GH returning toward baseline within hours, consistent with rapid catabolic clearance of the small peptide. Oral GHRP-6 was characterized by Ghigo and colleagues [ghigo1994_eje, ghigo1994_invest]; oral bioavailability is low (mechanism informed the move to orally bioavailable small-molecule agonists in the class).

There is no published modern population PK analysis, no chronic-dosing PK, no immunogenicity data, and no covariate analysis for renal or hepatic function for either GHRP-2 or GHRP-6. Both peptides are catabolized by proteolytic degradation; CYP-mediated metabolism is not expected to be a significant clearance pathway.

Pharmacodynamics

Pharmacodynamic effects in published human studies include dose-dependent serum GH peak with downstream IGF-1 elevation over the dosing interval [bowers1990, tiulpakov1995_clinendo, hayashi1991], and cross-axis pituitary effects (prolactin, ACTH, and cortisol elevation) at GH-releasing doses [korbonits1995, korbonits1999, kano2010]. The cortisol/ACTH response is sufficient at clinically active doses to function as a diagnostic adrenal-reserve test [kano2010]. Prolactin elevation accompanies the GH release.

Central appetite stimulation is a defining pharmacodynamic effect of GHRP-6 and is demonstrated for GHRP-2 in healthy and obese adults [laferrere2005, laferrere2006], paralleling the endogenous ghrelin

effect characterized by Wren et al. (2001) [wren2001]. Pharmacodynamic effects on downstream growth-hormone-axis endpoints (body composition, bone formation, insulin sensitivity) have not been characterized in human phase 3 controlled trials for either substance.

Comparing GHRP-2 / GHRP-6 Formulations

If a GHRP-2 and GHRP-6 preparation is approved after pharmacy review, RonanRx applies source documentation, formulation records, lot traceability, release checks, and storage controls appropriate to the actual dosage form. Research-use vial storage practices do not substitute for pharmacy-assigned storage, beyond-use dating, sterility controls when applicable, or recallable batch records.

Within the broader growth-hormone-axis pharmacology landscape, the FDA-approved tesamorelin (Egrifta) is a GHRH analog, a separate mechanism, with an FDA labeled use in HIV-associated lipodystrophy. Sermorelin is a GHRH(1-29) analog formerly authorized by FDA for pediatric GH deficiency. None of these is interchangeable with GHRP-2 or GHRP-6 in mechanism, evidence, or regulatory status.

GHRP-2 / GHRP-6 Storage and Handling

If a GHRP-2 and GHRP-6 preparation is approved after pharmacy review, RonanRx applies source documentation, formulation records, lot traceability, release checks, and storage controls appropriate to the actual dosage form. Research-use vial storage practices do not substitute for pharmacy-assigned storage, beyond-use dating, sterility controls when applicable, or recallable batch records.

GHRP-2 / GHRP-6 Compounding & Operations

503A compounding

Physicians may submit patient-specific prescription requests for pharmacy review. For GHRP-2 and GHRP-6, certain preparations may be available now when clinically appropriate, lawfully prescribed, and approved by the dispensing pharmacy. Availability is determined case by case and may depend on patient-specific documentation, ingredient status, source qualification, formulation feasibility, state requirements, and pharmacist judgment. The review starts with the evidence constraint: The evidence base for GHRP-2 and GHRP-6 includes older endocrine studies showing growth-hormone release, but that is not the same as an FDA-approved therapeutic program. Safety, dosing, and off-label use remain constrained by the limited clinical record.

This ingredient is part of an evolving FDA review process. RonanRx is monitoring FDA's PCAC process and any subsequent agency action. These ingredients are part of an evolving FDA review process for peptide-related bulk substances used in compounding. Availability may change after FDA review, PCAC discussion,

final agency action, or state-board guidance. For GHRP-2 and GHRP-6, RonanRx ties that monitoring to the evidence limits described above and to any patient-specific documentation submitted by the prescriber.

Valid patient-specific prescription required. Supporting clinical rationale may be requested. Compounded medications are not FDA-approved. No consumer self-ordering, no office stock, no bulk dispensing. Requests for GHRP-2 and GHRP-6 are reviewed before any preparation is made or released. A physician-submitted request is the regulated alternative to research-peptide supply. It requires patient-specific rationale and pharmacist review rather than a consumer choosing a GH-secretagogue from an online menu.

Pharmacist review

For GHRP-2 and GHRP-6, the pharmacist review starts before any preparation is made. Valid patient-specific prescription required. Supporting clinical rationale may be requested. The pharmacist reviews ingredient status, sourcing, formulation feasibility, state requirements, patient-specific documentation, and whether dispensing is appropriate case by case.

Quality and traceability

If a GHRP-2 and GHRP-6 preparation is approved after pharmacy review, RonanRx applies source documentation, formulation records, lot traceability, release checks, and storage controls appropriate to the actual dosage form. Research-use vial storage practices do not substitute for pharmacy-assigned storage, beyond-use dating, sterility controls when applicable, or recallable batch records. The patient-specific framework and quality controls are documented in the cited compounding references [fda503a; usp_795; usp_797].

Cold chain

If a GHRP-2 and GHRP-6 preparation is approved after pharmacy review, RonanRx applies source documentation, formulation records, lot traceability, release checks, and storage controls appropriate to the actual dosage form. Research-use vial storage practices do not substitute for pharmacy-assigned storage, beyond-use dating, sterility controls when applicable, or recallable batch records.

Frequently Asked Questions About GHRP-2 / GHRP-6

Can physicians request GHRP-2 and GHRP-6 through RonanRx?

Physicians may submit patient-specific prescription requests for pharmacy review. Certain preparations may be available now when clinically appropriate, lawfully prescribed, and approved by the dispensing pharmacy. Availability is determined case by case. Compounded medications are not FDA-approved, and no consumer self-ordering, office stock, or bulk dispensing is offered.

Are GHRP-2 or GHRP-6 FDA-approved for any indication?

No. Neither peptide has received FDA approval for any indication. GHRP-2 (pralmorelin) is licensed in Japan as a diagnostic test for adult growth hormone deficiency (GHRP Kaken 100), but this is not an FDA-recognized status [kano2010]. GHRP-6 was never developed into a commercial product anywhere.

How are GHRP-2 and GHRP-6 different from ipamorelin?

GHRP-2 and GHRP-6 are non-selective: at the doses needed to release growth hormone, they also raise prolactin, ACTH, and cortisol, and GHRP-6 in particular increases hunger through central ghrelin-receptor effects [korbonits1999; laferrere2005]. Ipamorelin, a later-generation selective pentapeptide, releases growth hormone without significantly elevating those other pituitary hormones in preclinical models [raun1998; kano2010]. All three are FDA Category 2 and none is eligible for 503A compounding [korbonits1995].

Why are GHRP-2 and GHRP-6 historically important?

They were the first synthetic compounds that could trigger growth hormone release through a mechanism distinct from GHRH [bowers1990]. The pharmacology of these peptides led directly to the cloning of the growth hormone secretagogue receptor (GHS-R1a) by Howard et al [howard1996]. in 1996, and to the discovery of the endogenous receptor ligand, ghrelin, by Kojima et al [kojima1999]. in 1999. The modern ghrelin literature, the orally bioavailable cancer-cachexia agonist anamorelin, and selective successor peptides such as ipamorelin all descend from the Bowers/Momany GHRP work [bowers2012_history].

Why are they sold by anti-aging and wellness clinics if they are not FDA-approved?

GHRP-2 and GHRP-6 are widely marketed by unregulated anti-aging and wellness clinics, online research-chemical sellers, and the unregulated peptide market. These channels operate outside the 503A regulated pharmacy pathway and outside FDA oversight of finished pharmaceutical products. Analytical characterization of seized black-market peptide products has documented identity, dose, and purity discrepancies [gajda2019]. RonanRx flags this market honestly: the existence of an unregulated supply does not change the substances' FDA regulatory status, and the pharmacy does not participate in that supply chain [krug2018; fda_503a_interim_policy].

What clinical evidence exists in humans?

Discovery and adult stimulation-test pharmacology (Bowers 1990; Tiulpakov 1995; Hayashi 1991), oral pharmacology in aging (Ghigo 1994), pediatric short-stature pilot studies (Pihoker 1995, 1997, 1998; Tiulpakov 1995; Mericq 1998), GHS-R-mutant proof-of-mechanism (Gondo 2001), adrenal-reserve diagnostic testing (Kano 2010), and food-intake pharmacology in healthy and obese adults (Laferrère 2005, 2006) [bowers1990; tiulpakov1995_clinendo; pihoker1995; gondo2001; laferrere2005]. There is no phase 3 program for either substance, no long-term safety dataset, and no controlled trial supporting body-

composition, anti-aging, or wellness use [pihoker1997; pihoker1998; mericq1998; kano2010; laferrere2006].

Are GHRP-2 and GHRP-6 allowed in sport?

No. Both peptides are on the World Anti-Doping Agency Prohibited List at all times under section S2 (peptide hormones, growth factors, related substances and mimetics, growth hormone secretagogues) [wada_prohibited_list_2025]. A validated urine LC-MS/MS detection method for pralmorelin (GHRP-2) and its metabolite is published [okano2010]. Athletes subject to anti-doping testing should not use GHRP-2 or GHRP-6 regardless of source.

Can physicians request GHRP-2 and GHRP-6 through RonanRx?

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How to Access GHRP-2 / GHRP-6

Compounded GHRP-2 / GHRP-6 is dispensed under 503A on a patient-specific prescription. Depending on your role, the next step looks different.

FOR PRESCRIBING CLINICIANS

Offer this medication

A pharmacist will follow up within two business days. We'll cover state availability, supported formulations, and what integration looks like for your clinic.

ronanrx.com/request-partnership-call

PATIENT WITH A DOCTOR

Receive your prescription

If your doctor has prescribed GHRP-2 / GHRP-6, sign up so we can prepare and ship your medication. The signup wizard collects intake and connects you to the prescribing workflow.

ronanrx.com/patients

PATIENT WITHOUT A DOCTOR

Find a partner clinic

RonanRx prescribes through partner clinics — we don't initiate prescriptions on this site. Read how the referral process works and how to find a partner clinic in your state.

ronanrx.com/find-clinic

Other compounds RonanRx makes

This monograph is one of many in the RonanRx formulary. Every compound below is prepared under 503A on a patient-specific prescription. Browse the full catalog at ronanrx.com/medications and ronanrx.com/peptides, or scan the codes at right for each index.

Medications

Peptides

MEDICATIONS (40)

Alpha-Lipoic Acid (ALA) — Antioxidant & mitochondrial
Coenzyme Q10 (CoQ10) — Antioxidant & mitochondrial
Glutathione — Antioxidant & mitochondrial
NAD+ / NMN — Antioxidant & mitochondrial
Compounded Topical Anesthetics (BLT, LET) — Dermatology
Topical Minoxidil — Dermatology
Topical Tretinoin — Dermatology
Compounded Magnesium — Energy & nutritional
Cyanocobalamin — Energy & nutritional
High-Dose Vitamin D — Energy & nutritional
Hydroxocobalamin — Energy & nutritional
Iron (Compounded) — Energy & nutritional
L-Carnitine — Energy & nutritional
Methylcobalamin (B12) — Energy & nutritional
Methylfolate — Energy & nutritional
Anastrozole — Hormone optimization
Clomiphene & Enclomiphene — Hormone optimization
DHEA — Hormone optimization
Estradiol — Hormone optimization
Estriol — Hormone optimization
Human Chorionic Gonadotropin (HCG) — Hormone optimization
Pregnenolone — Hormone optimization
Progesterone — Hormone optimization
Testosterone — Hormone optimization
Compounded Metformin — Metabolic & weight
Compounded Semaglutide — Metabolic & weight
Compounded Tirzepatide — Metabolic & weight
Lipotropic Injection (MIC, MICC) — Metabolic & weight
Low-Dose Naltrexone (LDN) — Metabolic & weight
Naltrexone-Bupropion Combination — Metabolic & weight
Topiramate — Metabolic & weight
Bremelanotide / PT-141 — Sexual health
Compounded Sildenafil — Sexual health
Compounded Tadalafil — Sexual health
Trimix Injection — Sexual health
Compounded Gabapentin — Sleep & recovery
Compounded Melatonin — Sleep & recovery
Compounded T3 (Liothyronine) — Thyroid
Compounded T3/T4 Combinations — Thyroid
Compounded T4 (Levothyroxine) — Thyroid

PEPTIDES (21)

Sermorelin — Available now

Tesamorelin — Available now

AOD-9604 — Growth-hormone axis (under FDA review)

CJC-1295 — Growth-hormone axis (under FDA review)

GHRP-2 / GHRP-6 — Growth-hormone axis (under FDA review)

Hexarelin — Growth-hormone axis (under FDA review)

Ipamorelin — Growth-hormone axis (under FDA review)

MK-677 / Ibutamoren — Growth-hormone axis (under FDA review)

5-Amino 1MQ — Metabolic & longevity (under FDA review)

Epitalon / Epithalon — Metabolic & longevity (under FDA review)

MOTS-C — Metabolic & longevity (under FDA review)

Thymosin Alpha-1 / Thymalin — Metabolic & longevity (under FDA review)

DSIP, Delta Sleep-Inducing Peptide — Neuro & cognitive (under FDA review)

Selank — Neuro & cognitive (under FDA review)

Semax — Neuro & cognitive (under FDA review)

Vasoactive Intestinal Peptide (VIP) — Neuro & cognitive (under FDA review)

BPC-157 — Tissue repair (under FDA review)

KPV — Tissue repair (under FDA review)

LL-37 — Tissue repair (under FDA review)

Pentadeca Arginate (PDA) — Tissue repair (under FDA review)

TB-500 / Thymosin Beta-4 — Tissue repair (under FDA review)