

AOD-9604 Peptide: The Complete Research Guide to the Fat-Loss Fragment

If you work in metabolic research, peptide science, or regenerative biology, you have almost certainly come across the name AOD-9604. This synthetic fragment of human growth hormone (HGH) has attracted significant scientific attention over the past two decades not for mimicking all of HGH's effects, but for isolating one highly specific action: the regulation of fat metabolism without the insulin-disrupting side effects associated with full-length growth hormone.

AOD 9604
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Research Use Only

-  LAB TESTED FOR PURITY
-  THIRD-PARTY VERIFIED
-  RESEARCH USE ONLY

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PEPTIDES

AOD 9604
5 mg / vial
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Originally developed by Monash University in Australia, [AOD-9604](#) (also written as AOD9604) represents amino acids 176–191 of the HGH sequence, modified with a tyrosine residue at the N-terminus. It was designed with a narrow purpose to stimulate lipolysis (fat breakdown) and inhibit lipogenesis (fat storage) and laboratory evidence suggests it achieves that purpose with considerable specificity.

This guide is written for researchers and scientific professionals seeking a thorough overview of AOD-9604's mechanisms, research applications, comparison to related peptides, and sourcing considerations. It is not intended as medical advice, and all discussion pertains to laboratory or investigational settings only.

For verified research-grade material, [Ageless Vitality Peptides](#) offers a curated catalog of research grade peptides for sale with strict quality assurance standards.

The Science Behind AOD-9604: Mechanism of Action

How AOD-9604 Targets Fat Cells

Unlike intact growth hormone, which binds to the GH receptor and initiates a broad signaling cascade — including IGF-1 production, protein synthesis, and changes in insulin sensitivity — AOD-9604 acts on a beta-3 adrenergic pathway. This receptor subtype is predominantly expressed in adipose tissue, which is why the peptide's effects appear to be tissue-selective.

Laboratory findings point to three primary mechanisms:

- **Lipolytic stimulation:** AOD-9604 activates lipases within fat cells, accelerating the breakdown of stored triglycerides into free fatty acids.
- **Anti-lipogenic effect:** Simultaneously, it inhibits the enzymes and transcription factors involved in converting dietary glucose into stored fat.
- **Metabolic rate modulation:** Some in vivo studies in rodent models have suggested an increase in resting metabolic activity, though the mechanism in humans remains under investigation.

Critically, AOD-9604 does not appear to produce meaningful insulin resistance or elevate IGF-1 levels in the research doses studied — a finding that distinguishes it sharply from exogenous HGH administration and makes it an interesting candidate for metabolic disease research.

AOD-9604 vs. Full-Length Human Growth Hormone

Researchers frequently compare AOD-9604 to HGH to understand what the fragment retains and what it sacrifices. The table below summarizes the key distinctions observed in published preclinical and early clinical studies:

Key Differences: AOD-9604 vs. HGH

- **Receptor binding:** HGH binds the GH receptor broadly; AOD-9604 acts primarily via beta-3 adrenergic and lipolytic pathways.

- **IGF-1 elevation:** HGH significantly raises IGF-1; AOD-9604 shows minimal to no IGF-1 elevation in available studies.
- **Insulin sensitivity:** HGH can reduce insulin sensitivity at pharmacological doses; AOD-9604 appears neutral in this regard.
- **Anabolic effects:** HGH promotes muscle protein synthesis broadly; AOD-9604 shows negligible anabolic signaling.
- **Fat metabolism:** Both promote lipolysis, though through different receptor pathways.

AOD-9604 in Research: What the Studies Show

Preclinical (Animal) Research Findings

The bulk of AOD-9604's evidentiary base comes from preclinical studies, primarily in obese rodent models. Research published in journals including *Endocrinology* and the *International Journal of Obesity* has documented:

- Significant reductions in body fat percentage in diet-induced obese mice given AOD-9604 compared to controls.
- Preserved lean body mass during fat loss periods, a finding that researchers found noteworthy given the metabolic stress typically associated with caloric restriction.
- No observable effect on blood glucose or serum insulin at doses studied, contrasting with findings for full-length GH.
- Dose-dependent lipolytic activity in isolated adipocyte assays, suggesting a direct cellular effect rather than purely systemic mediation.

Human Clinical Research

AOD-9604 is one of the few peptides to have progressed into human Phase II and Phase III clinical trials, conducted under the sponsorship of Metabolic Pharmaceuticals (Australia) in the early 2000s. The trials investigated its use as a potential anti-obesity compound.

Results from those studies were mixed. While early Phase II data showed promising reductions in body weight versus placebo, later larger trials did not achieve the same effect size. The compound ultimately did not receive pharmaceutical approval for obesity treatment. However, the trials did establish several important points for ongoing research communities:

- The peptide was well tolerated in human subjects at doses up to 1 mg/kg daily with no significant adverse events reported.
- No effects on thyroid function, blood pressure, or fasting glucose were observed in the clinical timeframes studied.
- The **AOD 9604 5mg** research vial format used today in laboratory settings corresponds loosely to the dosing ranges explored in these early trials, though translation from clinical to research use is not direct.

Cartilage and Bone Research: An Emerging Area

Beyond metabolism, a line of research has explored AOD-9604's potential in musculoskeletal tissue repair. In vitro and early in vivo data suggest the peptide may support chondrocyte activity and proteoglycan synthesis preliminary findings that have generated interest in osteoarthritis research models. This is an area where investigational work is still at an early stage, and conclusions are premature, but it represents an expanding frontier for the peptide.

AOD-9604 Peptide Formats and Research Specifications

Understanding the 5mg Vial Format

Most researchers sourcing **AOD 9604 5mg** will encounter it as a lyophilized (freeze-dried) white powder in a sealed vial, intended for reconstitution with bacteriostatic water prior to use. The 5mg quantity is a standard unit in peptide research that aligns with common experimental dosing protocols used in rodent model studies.

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Third-Party Tested for Purity & Identity

HIGH PURITY
≥ 99% Purity Verified by HPLC

RESEARCH GRADE
Designed for Laboratory Research

COA PROVIDED
Certificate of Analysis with Every Batch

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AOD 9604
5 mg/vial
RESEARCH USE ONLY
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MOTS-C
10 mg/vial
RESEARCH USE ONLY
99%+ PURITY

GHK-Cu
50 mg/vial
RESEARCH USE ONLY
99%+ PURITY

FOR LABORATORY RESEARCH PURPOSES ONLY | NOT FOR HUMAN CONSUMPTION

Key specifications researchers should evaluate when assessing a supplier:

- **Purity:** Research-grade material should be verified at ≥98% purity by HPLC analysis.
- **Molecular weight:** AOD-9604 has a molecular weight of approximately 1,817 Da.

- **Sequence:** Tyr-Leu-Arg-Ile-Val-Gln-Cys-Arg-Ser-Val-Glu-Gly-Ser-Cys-Gly-Phe (with disulfide bond)
- **Storage:** Lyophilized peptide is typically stable at -20°C for up to 24 months; reconstituted solution should be stored at 4°C and used within 30 days.
- **COA availability:** A Certificate of Analysis from a third-party lab is the minimum standard for any research peptide procurement.

Researchers in the United States looking to [Buy AOD-9604 5mg USA](#) should prioritize suppliers with documented domestic sourcing, transparent COAs, and established track records in the research community.

Comparing AOD-9604 to Related Research Peptides

AOD-9604 does not exist in a vacuum. Researchers investigating metabolic function, body composition, and longevity pathways often explore it alongside a broader panel of peptides. Understanding where it fits and where complementary compounds add value is essential for designing comprehensive research protocols.

AOD-9604 and MOTS-c

[MOTS-c](#) is a mitochondria-derived peptide that has been studied for its role in metabolic regulation, insulin sensitivity, and cellular stress response. While AOD-9604 acts primarily on adipose tissue via adrenergic pathways, MOTS-c operates at the level of mitochondrial function and AMPK activation. Researchers interested in comprehensive metabolic modeling often include both to capture adipose-level and mitochondrial-level effects in the same experimental design.

AOD-9604 and GHK-Cu

[GHK-Cu](#) (copper peptide) is researched primarily for its effects on tissue regeneration, wound healing, and anti-inflammatory signaling. While mechanistically distinct from AOD-9604, GHK-Cu is sometimes used in adjacent research investigating connective tissue repair — an area where AOD-9604's emerging cartilage-related findings may create overlapping interest.

AOD-9604 and IGF-1 LR3

[IGF-1 LR3 1mg](#) is a long-acting analog of insulin-like growth factor 1, studied for its anabolic and cellular growth-promoting properties. It represents the pathway that AOD-9604 deliberately avoids — IGF-1 upregulation. Researchers studying the differential effects of GH fragment versus full-length downstream signaling sometimes run both compounds to establish mechanistic contrast. For visual research tracking, published [IGF-1 LR3 before and after](#) data provides useful comparative framing.

AOD-9604 and NAD+

[NAD+ 500mg](#) is studied for its roles in cellular energy metabolism, sirtuin activation, and aging biology. Its relationship to AOD-9604 research is indirect, but researchers in metabolic aging models sometimes include NAD+ precursors to evaluate synergistic effects on mitochondrial efficiency during lipolytic states.

Other Peptides Commonly Used Alongside AOD-9604

The [CJC-1295/Ipamorelin](#) stack is another common reference point in GH-axis research. CJC-1295 is a GHRH analog that stimulates GH release from the pituitary, while Ipamorelin is a selective GHS-R agonist. Compared to this stack, AOD-9604 acts downstream and independently of pituitary signaling making it a useful comparator in studies that want to isolate post-receptor fat metabolism effects.

[Semax Peptide](#) is a neurotrophin-related research compound studied for cognitive and neuroprotective applications. While its primary research domain is distinct from AOD-9604's metabolic focus, multi-system research protocols sometimes include both when evaluating neuroendocrine and metabolic interactions. Researchers can explore detailed [Semax peptide benefits](#) and find comprehensive background at the [Semax peptide for research](#) resource page.

[Melanotan II 10mg](#) and [HCG 5000IU](#) round out the broader peptide panel, each with their own distinct research applications in reproductive endocrinology and melanocortin pathway studies, and are occasionally included in multi-axis metabolic research designs.

Sourcing AOD-9604 for Research: What to Look For

Quality Benchmarks for Research-Grade Peptides

The quality of peptide research is only as reliable as the material used. The proliferation of suppliers in the research peptide market has created significant variability — from pharmaceutical-comparable purity to materials that fall well short of acceptable research standards. Researchers evaluating suppliers of the AOD 9604 Research Peptide should apply a consistent vetting framework:

- **Third-party HPLC purity certification:** HPLC (High-Performance Liquid Chromatography) analysis is the standard method for verifying peptide purity. Request or confirm that COAs come from independent analytical laboratories, not in-house testing.
- **Mass spectrometry confirmation:** MS data confirms the peptide's molecular identity and rules out structural variants or contaminants that HPLC alone might miss.
- **Sterility and endotoxin testing:** For any peptide intended for in vivo animal studies, bacterial endotoxin testing (LAL assay) is essential to avoid confounding inflammatory responses.
- **Cold-chain shipping:** Lyophilized peptides are relatively stable but sensitive to heat and humidity during transit. Suppliers who ship with ice packs or dry ice demonstrate awareness of material integrity.

- **Transparent documentation:** The COA should be batch-specific, dated, and traceable to an identifiable lot number that corresponds to the material shipped.

Domestic vs. International Sourcing

For U.S.-based researchers, [AOD-9604 Peptide USA](#) sourcing from domestic suppliers offers meaningful advantages: faster shipping, easier customs clearance, more straightforward chain-of-custody documentation, and typically more responsive customer support for technical queries.

Those looking to [Buy AOD-9604 Peptide Online](#) should also evaluate return policies, reorder reliability, and whether the supplier maintains consistent stock of the same batch or frequently rotates suppliers the latter creates reproducibility challenges in longitudinal research.

Regulatory Context

In the United States, research peptides including [AOD-9604](#) occupy a specific regulatory category. They are not FDA-approved drugs and are not intended for human use outside of formal clinical trial frameworks. They are legally sold for in vitro research and animal study purposes by licensed suppliers. Researchers should ensure their institutional protocols align with applicable regulations, and that procurement and use comply with their institution's IRB or IACUC guidelines as appropriate.

AOD-9604 Research Protocol Considerations

General Dosing Parameters in Preclinical Literature

Research protocols for AOD-9604 in rodent models have typically used doses in the range of 0.25 to 2 mg/kg body weight administered subcutaneously or intraperitoneally. Human clinical trials explored doses from 1 mg to 9 mg daily. These parameters from published literature serve as starting reference points for researchers designing experimental protocols; they do not represent recommendations for any use outside controlled research settings.

Reconstitution and Handling

- **Reconstitute with bacteriostatic water:** Standard practice is to add 1–2 mL of bacteriostatic water (0.9% benzyl alcohol) to a 5mg lyophilized vial, yielding a concentration of 2.5–5 mg/mL.
- **Swirl, do not shake:** Vigorous shaking can denature peptide chains; gentle swirling until the powder dissolves is the preferred technique.
- **Use within 30 days when refrigerated:** Reconstituted peptide stored at 4°C maintains potency for approximately 30 days. Do not freeze reconstituted solutions.
- **Aliquot for long-term storage:** If working with bulk material, divide into single-use aliquots before freezing to avoid repeated freeze-thaw cycles.

Conclusion:

AOD-9604 occupies a distinctive position in the peptide research landscape. Its specificity as a fat-metabolism fragment that bypasses the broader hormonal effects of its parent molecule makes it both scientifically interesting and practically useful in research protocols that need to isolate adipose-tissue effects from systemic GH signaling.

The compound has accumulated a meaningful body of preclinical evidence, has been through human clinical trials (a milestone few research peptides reach), and continues to attract investigational interest in areas extending beyond its original metabolic focus, including musculoskeletal tissue research.

For research teams working in metabolic biology, obesity science, or longevity investigation, AOD-9604 merits serious consideration as a component of a broader peptide research toolkit one that might also include MOTS-c, GHK-Cu, IGF-1 LR3, and the growing catalog of research-grade compounds available for investigational use.

Researchers ready to source verified material can explore the full range of research grade peptides for sale at [Ageless Vitality Peptides](#), where each product is backed by third-party quality documentation and domestic U.S. availability.

Frequently Asked Questions (FAQ)

What is AOD-9604?

AOD-9604 is a synthetic peptide fragment derived from amino acids 176–191 of human growth hormone (HGH), with a tyrosine residue added at the N-terminus. It was originally developed to isolate and replicate HGH's fat-metabolizing properties without the broader hormonal effects associated with full-length growth hormone. In research settings, it is studied primarily for its lipolytic (fat-breaking) and anti-lipogenic (fat-storage-inhibiting) actions.

What is the difference between AOD-9604 and HGH?

While both compounds originate from the growth hormone sequence, they have distinct mechanisms and effect profiles. Full-length HGH activates the GH receptor and produces a wide range of effects including IGF-1 elevation, anabolic signaling, and insulin resistance at higher doses. AOD-9604, being only the C-terminal fragment, primarily interacts with beta-3 adrenergic receptors in fat tissue and does not appear to meaningfully raise IGF-1 or affect insulin sensitivity at doses studied.

Is AOD-9604 safe for research use?

In the clinical trials conducted by Metabolic Pharmaceuticals, AOD-9604 was generally well tolerated at doses up to 1 mg/kg with no significant adverse events reported. For in vitro and animal research conducted under appropriate institutional oversight, it is considered a viable experimental compound. Researchers should always ensure compliance with their institutional protocols and applicable regulations.

Where can researchers buy AOD-9604 5mg in the USA?

Researchers in the United States can [Buy AOD-9604 5mg USA](#) through [Ageless Vitality Peptides](#), which provides third-party tested, research-grade material with documented purity and full chain-of-custody transparency.

What peptides are commonly studied alongside AOD-9604?

Researchers frequently pair AOD-9604 with MOTS-c for mitochondrial metabolic comparisons, with GHK-Cu for tissue repair investigations, with IGF-1 LR3 as a mechanistic contrast for anabolic signaling, and with NAD+ for aging and energy metabolism models. CJC-1295/Ipamorelin is another common comparison point in GH-axis research.

How should AOD-9604 be stored?

Lyophilized (freeze-dried) AOD-9604 should be stored at -20°C in a dry, dark environment, where it is typically stable for 18–24 months. Once reconstituted with bacteriostatic water, it should be refrigerated at 4°C and used within 30 days. Repeated freeze-thaw cycles should be avoided to preserve peptide integrity.

Is AOD-9604 the same as the AOD 9604 Research Peptide sold online?

Yes — "AOD 9604," "AOD-9604," and references to the [AOD 9604 Research Peptide](#) all refer to the same compound. Hyphenation and spacing conventions vary between suppliers and publications, but the molecular identity is the same. When evaluating sources, focus on purity documentation and supplier reputation rather than naming convention differences.

Where can I find AOD-9604 Research Peptide for Sale?

Verified [AOD-9604 Research Peptide for Sale](#) is available through established research peptide suppliers with documented quality standards. Always request and verify a batch-specific Certificate of Analysis before procurement.