BRING THIS TO YOUR DOCTOR · GREY PEPTIDES

Arenicin

Also called: Arenicin-1; Arenicin-3; Arenicins; AA139

What it is

Arenicin is a family of 21-residue cationic beta-hairpin antimicrobial peptides from the marine lugworm (Arenicola marina), first described by Ovchinnikova et al. (2004). Stabilised by a disulfide bond like the horseshoe-crab peptide tachyplesin, arenicins permeabilise microbial membranes with particular strength against Gram-negative bacteria, are strongly hemolytic (engineered analogs such as AA139 reduce toxicity), and modulate the human complement system (PMIDs 38287360, 36286436). They are research peptides, not approved medicines, and have never been given to people as an approved treatment.

Approval status

Research Chemical. Not approved drugs: Drugs@FDA and the openFDA label endpoint hold no record, and FDA GSRS and ChEMBL hold no approved-drug record for arenicin peptides (searched November 7, 2026). They are marine-lugworm antimicrobial peptides studied as antibacterial (especially Gram-negative) and complement-modulating leads and engineering scaffolds; the optimised arenicin-3 analog AA139 has been in early antibiotic development but remains investigational, not approved, and there is no registered interventional trial of giving arenicin itself to people.

Dosing, as printed in the page's Recommended Dosing box

No established human dose

Arenicins are lugworm research peptides; no arenicin is an approved treatment. Even the clinically advanced derivative AA139 is an investigational compound.

Educational information, not medical advice. None is a recommendation for you. An unapproved compound has no established safe or effective human dose, and products sold for "research use only" are not made or tested for people. Talk to a doctor before acting on anything on this site, including before you start, stop or change any medicine or dose.

Key human evidence

No human study is carded on the page; its 6 study cards are reviews, animal or cell work. The first 2:

• **Arenicin peptides against Mycobacterium abscessus (cystic fibrosis pathogen)** (In Vitro, 2024). Of three arenicin isoforms and their disulfide-free derivatives, arenicin-1 was the most active against the drug-resistant lung pathogen Mycobacterium abscessus and the safest — non-toxic to human cells and non-hemolytic; it acted by inserting into mycobacterial lipids and rapidly disrupting the membrane without inducing resistance, making it a candidate for cystic-fibrosis-associated infections (an in-vitro study). **PMID 38287360**

• **Arenicin analogues (including AA139) modulate the complement system** (In Vitro, 2022). Three therapeutically promising arenicin analogues, including the clinical-stage AA139, were tested for effects on the human complement system; like the natural peptides they could both activate and inhibit complement depending on concentration, with each analog showing a distinct profile — evidence that complement effects should be considered when developing arenicin-based antibiotics (an in-vitro study). **PMID 36286436**

Interactions

A PubMed search for interaction studies of this compound with any drug (November 7, 2026, 3 records) found none in people. That is not evidence that it is safe to combine with anything.

Side effects and cautions

Reported side effects	Contraindications and cautions
• No approved-treatment human safety data exist for arenicin itself • As membrane-active beta-hairpins, hemolysis and cytotoxicity to host cells are the central safety concern — the natural peptides are strongly hemolytic, and analog design (AA139, disulfide-free forms) aims to reduce it (PMIDs 35523364, 33321960) — research findings, not approved-drug data • Arenicins modulate the human complement system in a dose-dependent way (PMIDs 36286436, 33321960), an effect to weigh in any development • Material sold online as an 'arenicin' is an unregulated research chemical of unverified content	• Not approved medicines: no FDA application or label, and no approval anywhere (AA139 is investigational) • No approved human dosing, interaction, pregnancy or long-term safety data exist for arenicins • They are lugworm research antimicrobial peptides, not treatments • Their strongly membrane-disrupting, hemolytic nature warrants particular caution about effects on host cells

Five questions to ask

1. Arenicin is listed here as "Research Chemical". What does the evidence on this sheet mean for someone in my situation, and is there an approved treatment I should consider instead?
2. Here are the medicines and supplements I take. Do any of them interact with Arenicin? This sheet records none published, which does not mean none exist.
3. Which side effects should make me stop and call you, for example no approved-treatment human safety data exist for arenicin itself?
4. Do any of the cautions on this sheet apply to me, such as: Not approved medicines: no FDA application or label, and no approval anywhere?
5. What should we check before I start and while I am on it (blood tests, blood pressure, weight), and how often?

Grey Peptides is a vendor-neutral encyclopedia: it sells nothing and names no seller. This sheet is educational, not medical advice, and is not a prescription.