Certepetide

Also called: CEND-1; LSTA1; LSTA-1; iRGD; iRGD peptide; Certepetida; CRGDKGPDC

What it is

Certepetide (CEND-1, LSTA1; the peptide known in the laboratory as iRGD) binds alphaV integrins on tumour vessels, is cut there to expose a neuropilin-1 binding motif, and switches on a transport route that carries co-injected drugs into tumour tissue without being attached to them (PMIDs 19962669, 20378772). In 31 patients with metastatic pancreatic cancer it added no dose-limiting toxicity to gemcitabine and nab-paclitaxel, and 17 of 29 assessable patients had tumour shrinkage with median survival of 13.2 months (PMID 35803294). Randomised trials in pancreatic and bile-duct cancer have run; no randomised result is published, and the peptide is approved nowhere.

Approval status

In Clinical Trials. Not approved anywhere. The openFDA Drugs@FDA and label endpoints hold no record for certepetide, LSTA1 or CEND-1 (searched November 4, 2026), and ChEMBL records a highest clinical phase of 2 (CHEMBL5315026). ClinicalTrials.gov holds eight records: the first-in-human phase 1 in metastatic pancreatic cancer (NCT03517176, completed 2020), the randomised phase 2 ASCEND trial in the same disease (NCT05042128, no results posted), the placebo-controlled phase 2a BOLSTER trial in cholangiocarcinoma and gallbladder cancer (NCT05712356, 66 patients, completed April 2026, results posted), an investigator-sponsored trial with FOLFIRINOX (NCT05121038), two trials by the Chinese licensee Qilu Pharmaceutical (NCT05052567, NCT06261359) and two withdrawn records (NCT06592664, NCT06216561). A phase 2a trial in newly diagnosed glioblastoma runs in Estonia and Latvia under EU clinical trial number 2023-506813-23-00. The developer, Lisata Therapeutics, says it holds US fast track designation in pancreatic cancer, US orphan designation in pancreatic cancer, glioma, osteosarcoma and cholangiocarcinoma, EU orphan designation in pancreatic cancer and US rare paediatric disease designation in osteosarcoma, and that readiness work for a planned phase 3 trial in pancreatic cancer has been delayed to conserve capital (its quarterly filing for the period ended June 30, 2026).

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

Used in human trials

No manufacturer dose exists for this use: these are amounts given in published trials, not recommendations.

Protocol and source	Dose	Frequency	Duration	Route
Study: ASCEND randomised phase 2, pancreatic cancer **[Human study]** PMID 41647283	3.2 mg/kg	On days 1, 8 and 15 of each 28-day cycle	Until the disease progressed	Intravenous, with gemcitabine and nab-paclitaxel
Study: ASCEND second cohort, a repeat dose **[Human study]** PMID 41647283	3.2 mg/kg twice	A second dose four hours after chemotherapy, on the same days	Until the disease progressed	Intravenous
Study: phase 1 dose escalation, peptide alone then with chemotherapy **[Human study]** PMID 35803294	0.2 to 3.2 mg/kg	A single bolus in a seven-day run-in, then weekly for three weeks of four	One escalation cycle, then expansion	Intravenous bolus

Educational information, not medical advice. Each dose above is tagged with its source: an approved label, a published human study, animal data, or amounts reported by users. 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

The first 3 of the 5 human studies carded on the page (12 study cards in all):

• **First-in-human phase 1 with gemcitabine and nab-paclitaxel** (Human, 2022). Thirty-one adults with untreated metastatic pancreatic ductal adenocarcinoma at three Australian hospitals were given the peptide as an intravenous bolus, first alone during a seven-day run-in at doses rising from 0.2 to 3.2 mg/kg, then on days 1, 8 and 15 of 28-day cycles with gemcitabine 1,000 mg/m2 and nab-paclitaxel 125 mg/m2 until the disease progressed. No dose limited the escalation. The commonest severe events were the ones the chemotherapy pair is known for: low neutrophils in 55% of patients, anaemia in 26%, low white cells in 16% and pulmonary embolism in 13%. Serious events occurred in 71%, mostly from the cancer itself, and ten patients died during the study, nine from progressive disease and one from a stroke. Of 29 patients assessed for response, 17 (59%) had tumour shrinkage, including one complete response, and median overall survival was 13.2 months (95% CI 9.7 to 22.5) after a median 26 months of follow-up. The authors concluded that randomised trials were warranted. The trial was funded by the developer. **PMID 35803294**

• **Pharmacokinetics in four animal species and in patients** (Human, 2023). Infused intravenously, the peptide left the blood quickly: a half-life of roughly 25 minutes in mice and about 2 hours in patients with metastatic pancreatic cancer. A tritium-labelled version given to mice bearing mammary tumours appeared in the tumour and in several healthy tissues within minutes, but had cleared from most healthy tissue by three hours while a substantial amount stayed in the tumour. In mice with liver cancer, the tumour stayed penetrable to injected contrast agents and dyes for at least 24 hours after one dose. The authors read this as a short blood exposure buying a much longer window for the drugs given with it. **PMID 36982773**

• **Population pharmacokinetics in patients** (Human, 2025). Concentration measurements from patients with metastatic pancreatic cancer receiving the peptide with nab-paclitaxel and gemcitabine fitted a two-compartment model with linear elimination. Body weight affected the volumes of distribution and kidney function affected clearance: as creatinine clearance fell, clearance of the peptide fell and exposure rose, and the authors flagged both a body weight of 100 kg and a creatinine clearance of 50 or 150 mL/min as potentially meaningful for exposure. The analysis exists to inform dose choice in later trials; it reports no clinical outcome. **PMID 39789733**

Interactions

Human interaction studies found on PubMed (search of November 4, 2026):

• With gemcitabine and nab-paclitaxel: co-administration is the point of the drug, not a hazard to avoid: in 31 patients the peptide was given on each chemotherapy day with no dose-limiting toxicity and a side-effect pattern the authors judged consistent with the chemotherapy pair alone (PMID 35803294)

• With impaired kidney function (not a drug interaction, recorded here because it changes exposure): clearance falls and exposure rises as creatinine clearance falls, which is why trials required adequate renal function; body weight affects the volumes of distribution (PMID 39789733)

Side effects and cautions

Reported side effects	Contraindications and cautions
• No dose-limiting toxicity at any dose up to 3.2 mg/kg in the phase 1 trial, and adverse events generally consistent with what gemcitabine and nab-paclitaxel cause on their own (PMID 35803294) • Severe low neutrophil counts in 55% of the 31 phase 1 patients, anaemia in 26%, low white cells in 16% and pulmonary embolism in 13%: the recognised toxicity of that chemotherapy pair (PMID 35803294) • Serious adverse events in 71% of phase 1 patients, mostly attributed to the cancer progressing; ten deaths during the study, nine from progressive disease and one from a stroke (PMID 35803294) • In the placebo-controlled bile-duct cancer trial, serious adverse events in 10 of 23 patients on the peptide against 12 of 21 on placebo in the untreated group, and 3 of 11 against 4 of 11 in the second-line group; deaths were 12 against 10 and 4 against 2 (ClinicalTrials.gov NCT05712356, posted results) • Exposure rises as kidney function falls, which is a reason for the renal-function entry criteria in the trials rather than a reported harm (PMID 39789733) (1 more on the page)	• Only inside a clinical trial: there is no approved product, no approved dose and no supply outside trial sites • Never without the chemotherapy it is meant to help, since the peptide has no antitumour effect of its own in any published study • Impaired kidney function raises exposure, and trials required a creatinine clearance of at least 60 mL/min (PMIDs 39789733, 35803294) • Trials excluded brain metastases, recent major surgery or radiotherapy, active infection, significant heart disease and pregnancy, so nothing is known about the peptide in those settings (PMID 35803294) • The receptor it engages, neuropilin-1, is present outside tumours and has roles in immune cells, nerves and bone, which is a reason for caution rather than a known harm (PMID 42413921)

Five questions to ask

1. Certepetide is listed here as “In Clinical Trials”. 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 Certepetide? This sheet lists the interactions on record.
3. Which side effects should make me stop and call you, for example no dose-limiting toxicity at any dose up to 3.2 mg/kg in the phase 1 trial?
4. Do any of the cautions on this sheet apply to me, such as: Only inside a clinical trial: there is no approved product, no approved dose and no supply outside trial sites?
5. What should we check before I start and while I am on it (blood tests, blood pressure, weight), and how often?

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