BRING THIS TO YOUR DOCTOR · GREY PEPTIDES

Buforin

Also called: Buforin I; Buforin II; Buforin IIb

What it is

Buforin is a histone-H2A-derived antimicrobial peptide from the Asian toad Bufo bufo gargarizans (buforin I, 39-mer; buforin II, 21-mer). Unlike pore-forming peptides such as magainin, buforin II penetrates the cell membrane without lysing it and kills by binding DNA and RNA (PMID 9514864). This cell-penetrating, DNA-binding behaviour underlies the anticancer derivative buforin IIb (PMID 25958204) and its use as a delivery scaffold. It is a research peptide, not an approved medicine, and has never been given to people as a treatment.

Approval status

Research Chemical. Not a drug: Drugs@FDA and the openFDA label endpoint hold no record, and FDA GSRS and ChEMBL hold no approved-drug record for buforin (searched November 7, 2026). It is a toad-derived, histone-H2A-based antimicrobial and cell-penetrating peptide studied in the laboratory (antifungal chimeras, the anticancer derivative buforin IIb, delivery conjugates, antimicrobial materials); there is no therapeutic development to market and no registered interventional trial of giving it to people.

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

No established human dose

Buforin is a research antimicrobial peptide; it has never been given to people as a treatment. The work is in cells, microbes and materials, at experimental concentrations that do not carry over to people.

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:

• **Buforin II kills by penetrating the membrane and binding DNA/RNA (not pore-forming)** (In Vitro, 1998). Compared directly with the pore-forming peptide magainin 2, buforin II killed Escherichia coli WITHOUT lysing the membrane even well above its minimal inhibitory concentration; labeled buforin II penetrated the membrane and accumulated inside the cell, and it bound DNA and RNA far more strongly than magainin — indicating it kills by entering the cell and inhibiting nucleic-acid function, a non-lytic mechanism (the defining mechanistic study). **PMID 9514864**

• **Buforin IIb (anticancer derivative) induces ER-stress apoptosis in cancer cells** (In Vitro, 2015). The synthetic cell-penetrating anticancer peptide buforin IIb induced apoptosis in human cervical-carcinoma (HeLa) cells by up-regulating endoplasmic-reticulum stress proteins and driving mitochondrial membrane permeabilization through stress kinases (JNK, p38); ER-stress and calcium-chelation inhibitors rescued the cells — showing an ER-stress-mediated cell-death pathway (an in-vitro anticancer study). **PMID 25958204**

Interactions

A PubMed search for interaction studies of this compound with any drug (November 7, 2026, 4 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 human adverse-event data exist: no published study has administered buforin to people • It is cell-penetrating and binds DNA/RNA, so effects on host cells (not only microbes) are an intrinsic consideration — chimeras are designed to spare human fibroblasts (PMID 36551475) • A derivative (buforin IIb) is cytotoxic to cancer cells by design (PMID 25958204); selectivity for target over healthy cells is a key research question, not a settled safety profile • Material sold online as 'buforin' is an unregulated research chemical of unverified content	• Not a medicine: no FDA application or label, and no approval anywhere • No human dosing, interaction, pregnancy or long-term safety data exist for administered buforin • It is a research antimicrobial/cell-penetrating peptide, not a treatment • Its DNA/RNA-binding, cell-penetrating nature warrants caution about effects on host cells in any use

Five questions to ask

1. Buforin 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 Buforin? 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 human adverse-event data exist: no published study has administered buforin to people?
4. Do any of the cautions on this sheet apply to me, such as: Not a medicine: 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?

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