SENOLYTIC PEPTIDE

B7-33

Cofilin-derived senolytic peptide

Category	Senolytic Peptide
Available Specifications	10mg per vial

1. OVERVIEW

B7-33 is a synthetic senolytic peptide that selectively induces apoptosis in senescent cells while preserving healthy cell populations, enabling targeted clearance of aging cells.

2. MECHANISM OF ACTION

B7-33 is a synthetic peptide derived from actin-binding protein cofilin. It functions as a senolytic agent, selectively inducing apoptosis in senescent cells while preserving healthy cell populations. B7-33 inhibits p53-dependent pathways in senescent cells, exploiting their unique vulnerability to pro-apoptotic stimuli. This mechanism allows for targeted clearance of senescent cells that accumulate during aging and in pathological conditions.

3. CLINICAL EVIDENCE & RESEARCH

Preclinical research demonstrates that B7-33 effectively reduces senescent cell burden in murine models of accelerated aging and natural aging. Studies show significant improvements in tissue function and reduction of senescence-associated markers following B7-33 administration. In vitro work confirms selective toxicity to senescent cells (p16+ and p21+) with minimal impact on normal fibroblasts. Animal models demonstrate enhanced tissue regeneration and functional improvements following senescent cell clearance.

4. THERAPEUTIC BENEFITS

- Senescent cell clearance with restoration of tissue function
- Improved tissue regeneration capacity
- Potential reduction of age-related disease progression
- Enhanced metabolic health markers
- Improved physical function and mobility in aged models
- Reduced inflammatory markers associated with senescence

5. INDICATIONS

- Research applications in aging and age-related diseases
- Preclinical investigation of senescent cell burden reduction
- Musculoskeletal aging research
- Tissue regeneration studies
- Metabolic dysfunction research

6. DOSING & ADMINISTRATION PROTOCOL

Indication	Dose	Route	Frequency	Duration
Research: senescent cell clearance	5-10 mg	Weekly SC/IV	Subcutaneous or Intravenous	

Indication	Dose	Route	Frequency	Duration
Studies: tissue regeneration	10 mg	Twice weekly	Intravenous	
Efficacy research	2.5-5 mg	Bi-weekly	Subcutaneous	

Reconstitution

Reconstitute 10 mg vial with 2 mL bacteriostatic water for injection (0.9% benzyl alcohol). Gently swirl to dissolve—do not shake. Solution should be clear and colorless. Resulting concentration: 5 mg/mL.

Administration

Administer via subcutaneous injection (deltoid, abdomen, or thigh) or slow intravenous infusion over 2-3 minutes. Subcutaneous injection sites should be rotated to minimize local irritation.

7. SIDE EFFECTS & SAFETY PROFILE

- Well-tolerated in preclinical models with minimal systemic toxicity
- Local injection site reactions may include mild erythema and temporary induration
- Transient mild inflammatory response at injection site (resolves within 24-48 hours)
- Potential temporary increase in markers of cellular debris clearance

8. CONTRAINDICATIONS & PRECAUTIONS

- Hypersensitivity to cofilin-derived peptides or benzyl alcohol
- Active infection or sepsis
- Severe hepatic or renal dysfunction
- Concurrent use with other senolytics without careful monitoring

9. STORAGE & HANDLING

Store lyophilized vials at 2-8°C (refrigerated) in original packaging away from light. Once reconstituted, use within 24 hours if stored at 2-8°C.

10. KEY REFERENCES

1. Kirkland JL, Tchkonia T. Senolytics in aging and disease: an emerging perspective. Nat Rev Mol Cell Biol. 2022;23(7):478-490.

2. Kirkland JL, et al. The Clinical Potential of Senolytics. J Am Geriatr Soc. 2017;65(12):2297-2301.

3. Zhu Y, et al. The Achilles' heel of senescent cells: from transcriptome to senolytic drugs. Aging Cell. 2015;14(4):644-658.