slu-pp-915 capsules

SLU-PP-915 is an **orally bioavailable, preclinical ERRα/β/γ pan-agonist** being studied as an "exercise-mimetic" research compound—not an approved medication or validated dietary supplement. The published evidence is animal/preclinical work, so marketed capsules do not have an established human dose, efficacy profile, or safety margin. [1]

What the capsule claim means

The molecule was designed to activate estrogen-related receptors (ERRs), nuclear receptors that regulate mitochondrial biogenesis, oxidative phosphorylation, fatty-acid oxidation, and other aerobic-metabolism programs. In the published study, oral exposure supported improved aerobic exercise capacity in mice, with effects reported as comparable to SLU-PP-332 after accounting for systemic exposure. [1]

"Capsules" are simply a vendor delivery format. They do **not** mean the product has been formulated, standardized, clinically tested, or regulated as an oral pharmaceutical.

Evidence status

Question	Current status
Human clinical trials establishing a dose	Not established in the publication
Human pharmacokinetics/bioavailability	Not established in the publication
Long-term human safety	Unknown
Approved therapeutic indication	None established
Preclinical rationale	Stronger aerobic-metabolic and mitochondrial transcriptional signaling in animal research

The 2026 paper frames SLU-PP-915 as a chemical tool and a potential lead for metabolic, cardiovascular, and muscle diseases; it does not establish clinical use in people. [1]

Main cautions with marketed capsules

- **Identity risk:** The capsule may contain a different compound, degraded material, filler-dominated material, or a misrepresented amount.
- **Dose-content risk:** A label such as "10 mg" or "20 mg" has little value without lot-specific, quantitative assay data.

- **Impurity risk:** Small-molecule synthesis can leave regioisomers, intermediates, residual solvents, inorganic residues, and degradation products that a basic identity test will miss.
- **Mechanism risk:** Pan-ERR agonism is broad transcriptional modulation, not a narrowly targeted "cardio" or "fat-burning" intervention. Human effects on cardiac energetics, glucose handling, thyroid-axis-adjacent physiology, liver metabolism, muscle, and drug-metabolizing pathways have not been adequately characterized.
- **Sport risk:** ERR agonists have drawn attention as potential exercise mimetics with possible doping relevance. [2]

If you are assessing a supplier

At an absolute minimum, request a **lot-specific** analytical package tied to the capsule lot:

- Quantitative HPLC/UPLC assay of capsule content, not only raw powder.
- LC-MS or HRMS identity confirmation.
- Full chromatogram with integration and stated purity method.
- Residual-solvent panel.
- Heavy-metal testing.
- Microbial limits where applicable.
- Content uniformity across capsules.
- Stability information for the finished capsule formulation.
- Independent, non-vendor-coordinated confirmation if the material is intended for any consequential research decision.

A "99% purity" PDF without method details, chromatograms, lot traceability, or capsule-content testing should be treated as marketing rather than meaningful verification.

Bottom line

SLU-PP-915 is scientifically interesting because it appears to solve the poor oral-bioavailability limitation of SLU-PP-332 in preclinical models. But an online "SLU-PP-915 capsule" is still an unapproved, human-untested research product; the biggest practical issue is not capsule convenience, but credible verification of identity, assay, impurities, and actual human risk. [1]

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CAS number for slu-pp-915

The CAS Registry Number for **SLU-PP-915** is **2285432-92-8**. Its molecular formula is $C_{17}H_{13}BFNO_3S$, with molecular weight about 341.16–341.2 g/mol. [11] [12]

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SLU-PP-915 chemical structure and synthesis

SLU-PP-915 is a 2,5-disubstituted thiophene carboxamide bearing a **meta-phenylboronic acid** and an **ortho-fluoroanilide**. A published two-step synthesis starts from 5-bromothiophene-2-carboxylic acid: amidation with 2-fluoroaniline, followed by Pd-catalyzed Suzuki coupling with 1,3-phenylenediboronic acid. [24] [25]

Chemical identity

Property	Value
Common name	SLU-PP-915
Medicinal-chemistry code	Compound 10s
CAS RN	2285432-92-8
IUPAC name	[3-[5-[(2-fluorophenyl)carbamoyl]thiophen-2-yl]phenyl]boronic acid
Formula	$C_{17}H_{13}BFNO_3S$
Molecular weight	341.2 g/mol
Exact mass	341.0693 Da
InChIKey	CKROIKQTGRZRKF-UHFFFAOYSA-N
Canonical SMILES	`B(C1=CC(=CC=C1)C2=CC=C(S2)C(=O)NC3=CC=CC=C3F)(O)O`

These identifiers and the 2D structure are listed in PubChem (CID 142532359). [26]

Structural features

The structure can be parsed as:

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3-boronophenyl — thiophene — C(=O)NH — 2-fluorophenyl
                     |
                2,5-disubstitution
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More specifically:

- The **thiophene core** is substituted at C-2 by the N-(2-fluorophenyl) carboxamide and at C-5 by a 3-boronophenyl group.
- The **boronic acid** $B(OH)_2$ replaces the phenolic/aniline hydrogen-bond-donor motif explored in related analogs.
- The **secondary amide** supplies one NH donor and a carbonyl acceptor.
- The molecule has no stereocenters or geometric-isomer issue. [26]

In the original SAR series, SLU-PP-915/10s was selected because the meta-boronic-acid analogue retained pan-ERR agonism while showing high stability in both mouse and human liver microsomes in that assay set. [25]

Published synthesis

Step 1 — Amide formation

Transformation:
5-bromothiophene-2-carboxylic acid + 2-fluoroaniline
→ 5-bromo-*N*-(2-fluorophenyl)thiophene-2-carboxamide (**intermediate 2a**)

Reported conditions:

- 5-bromothiophene-2-carboxylic acid: 1.0 equiv
- TBTU: 1.0 equiv
- DIPEA: 2.5 equiv
- 2-fluoroaniline: 1.2 equiv
- Dry DMF, 1 mL/mmol
- Pre-activate acid/TBTU/DIPEA for 20 min
- Add aniline; stir overnight at room temperature
- Water quench; EtOAc extraction; $MgSO_4$ drying
- Silica purification, *n*-pentane/EtOAc 5:1

The analytical paper reports isolation of 2a as a gray solid in 61.8% yield on a 5.8 mmol 2-fluoroaniline input scale. [24]

Step 2 — Suzuki coupling

Transformation:
Intermediate 2a + 1,3-phenylenediboronic acid
→ SLU-PP-915

Reported conditions:

- Bromothiophene carboxamide 2a: 1.0 equiv
- 1,3-phenylenediboronic acid: 1.3 equiv
- Cs_2CO_3: 2.0 equiv
- $Pd(PPh_3)_4$: 1 mol%
- 1,4-dioxane, 5 mL/mmol, plus water, 2 mL/mmol
- Reflux overnight
- Cool, Celite filtration, concentrate
- Wash crude material with cyclohexane and DCM to remove triphenylphosphine oxide

On a reported 0.70 mmol scale of intermediate 2a, this furnished SLU-PP-915 as a gray solid: 0.17 g, **72.3% isolated yield**. [24]

Reaction scheme

$$\text{5-Br-thiophene-2-CO}_2\text{H} \xrightarrow[\text{DMF, RT, overnight}]{\text{2-fluoroaniline, TBTU, DIPEA}} \text{5-Br-thiophene-2-CONH-(2-F-Ph)} \xrightarrow[\text{dioxane/H}_2\text{O, reflux}]{\text{1,3-phenylenediboronic acid, Cs}_2\text{CO}_3\text{, Pd(PPh}_3\text{)}_4} \text{SLU-PP-915}$$

The design paper describes this chemistry as a general route to the 2,5-disubstituted thiophene series: amide coupling and Suzuki installation of the C-5 aryl group. It also notes that boronic-acid-containing analogues were made using diboronic-acid coupling partners.[25]

Characterization and handling implications

The later analytical study reported the following identity-supporting ^{1}H NMR features for SLU-PP-915 in DMSO-d_6, including the diagnostic amide NH singlet at δ 10.24 ppm and aromatic/thiophene signals over roughly δ 7.22–8.09 ppm. It also used LC-HRMS/MS in negative-ion mode, detecting the parent as $[M-H]^-$ at theoretical m/z 340.0620; a dominant product ion was m/z 203.0340.[24]

One analytical complication is the boronic acid: it can undergo oxidative conversion to the corresponding phenol, and the authors observed that oxidation-related products—including the phenolic metabolite—were detectable even in enzyme-blank conditions under their in-vitro metabolism workflow. This makes oxidative stability and full impurity profiling especially relevant for material verification.[24]

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