Strontium Ranelate

Cat. No.: HY-17397

CAS No.: 135459-87-9

Molecular Formula: $C_{12}H_6N_2O_8SSr_2$

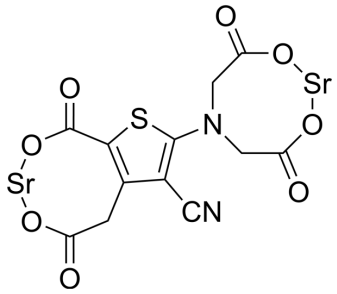
Molecular Weight: 513.49

Target: CaSR

Pathway: GPCR/G Protein

Storage: 4°C, sealed storage, away from moisture

* The compound is unstable in solutions, freshly prepared is recommended.



SOLVENT & SOLUBILITY

In Vitro

0.1 M HCL : 17.5 mg/mL (34.08 mM; ultrasonic and adjust pH to 3 with HCl)

H_2O : 2 mg/mL (3.89 mM; ultrasonic and warming and heat to 60°C)

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	1.9475 mL	9.7373 mL	19.4746 mL
5 mM	0.3895 mL	1.9475 mL	3.8949 mL
10 mM	0.1947 mL	0.9737 mL	1.9475 mL

Please refer to the solubility information to select the appropriate solvent.

In Vivo

1. Add each solvent one by one: Saline
   Solubility: 2 mg/mL (3.89 mM); Clear solution; Need ultrasonic and warming and heat to 60°C

BIOLOGICAL ACTIVITY

Description

Strontium Ranelate (S12911) is an antiosteoporotic agent that acts by reducing bone resorption and promoting bone formation, thereby inducing a positive bone balance. Strontium Ranelate can also activate the calcium-sensing receptor (CaSR) in non skeletal cells, resulting in the activation of inositol 1, 4, 5-triphosphate production and mitogen-activated protein kinase signaling[1][2].

In Vitro

Strontium Ranelate (0.1-1 mM; 22 days; Mouse calvaria cells) treatment shows the expression of mRNA for early osteoblast markers (alkaline phosphatase, ALP) is visualized by day 5, while late markers (osteocalcin, OCN) are detectable only by day 15 and beyond[1].

Strontium Ranelate (0.1-1 mM; 22 days; Mouse calvaria cells) treatment results in significantly increases the mRNA expression of the osteoblastic markers ALP, BSP and OCN at day 22 of MC cell culture[1].

Strontium Ranelate is found to increase alkaline phosphatase activity and prostaglandin E2 production in a COX-2 dependent manner in murine marrow stromal cells[2].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

RT-PCR[1]

Cell Line:	Mouse calvaria (MC) cells
Concentration:	0.1 mM, 0.3 mM or 1 mM
Incubation Time:	22 days
Result:	The expression of mRNA for early osteoblast markers (ALP) was visualized by day 5, while late markers (OCN) were detectable only by day 15 and beyond.

Western Blot Analysis[1]

Cell Line:	Mouse calvaria (MC) cells
Concentration:	0.1 mM, 0.3 mM or 1 mM
Incubation Time:	22 days
Result:	Significantly increased the mRNA expression of the osteoblastic markers ALP, BSP and OCN at day 22 of MC cell culture.

In Vivo

Strontium Ranelate increases bone formation and decreased bone resorption, which results in increased bone mass in the vertebrae of intact adult mice[2].

In intact adult rats, Strontium Ranelate also increases bone mass, as measured by dual-energy X-ray absorptiometry, in lumbar vertebra and femur, and this is confirmed by histological assessment of trabecular bone volume in the tibial metaphysis[2].

Strontium Ranelate is found to decrease bone resorption and to increase bone formation in alveolar bone in normal adult monkeys (Macaca fascicularis), which exhibits extensive bone remodeling[2].

In ovariectomized rats, short-term (3 months) treatment with Strontium Ranelate prevents trabecular bone loss induced by oestrogen deficiency, as demonstrated by bone ash, bone mineral content and histomorphometric analysis in the tibial metaphysis. This effect results from decreased bone resorption while bone formation was maintained. These beneficial effects of Strontium Ranelate on bone mass and microarchitecture in ovariectomized rats are confirmed in long-term experiments. In this long-term study (2 years), the increase in bone mass and microarchitecture induced by Strontium Ranelate results in a marked improvement in bone strength, supporting the beneficial effect of this drug on bone resistance [2].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Biosci Rep. 2021 Jan 14;41(1):BSR20203003.
- bioRxiv. 2020 Jun.

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REFERENCES

[1]. Bonnelye E, Chabadel A, Saltel F, Jurdic P. Dual effect of strontium ranelate: stimulation of osteoblast differentiation and inhibition of osteoclast formation and resorption in vitro. Bone. 2008 Jan;42(1):129-38. Epub 2007 Sep 12.

[2]. Marie PJ. Strontium ranelate: a dual mode of action rebalancing bone turnover in favour of bone formation. Curr Opin Rheumatol. 2006 Jun;18 Suppl 1:S11-5.

Caution: Product has not been fully validated for medical applications. For research use only.

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