

Product Data Sheet

Product Name: Isoflurane

Cat. No.: GC45487

Chemical Properties

Cas. No. 26675-46-7

SMILES FC(OC(Cl)C(F)(F)F)F

Formula C3H2ClF5O

M.Wt 184.5

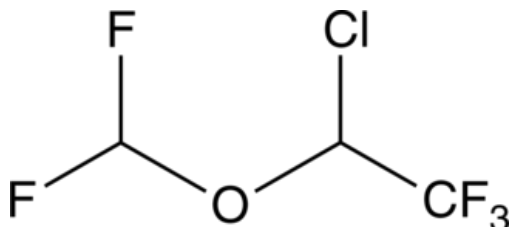
Solubility DMF: miscible, DMSO: miscible, Ethanol: miscible, Ethanol: PBS (pH 7.2) (1:1): 0.5 mg/ml

Storage Store at 2-8°C

General tips For obtaining a higher solubility, please warm the tube at 37 °C and shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C for several months.

Shipping Condition Evaluation sample solution: ship with blue ice. All other available size: ship with RT, or blue ice upon request.

Structure



Protocol

This plan only provides a guide, please modify it to meet your specific needs.

Isoflurane-treated animals^[1]:

1. Retrieve the animal from its cage and place it in the induction chamber. Expose the animal to 100% oxygen for 2-3min, and then adjust to provide 4-5% isoflurane.
2. Monitor the animal until it becomes ataxic, recumbent, with a steady, slow respiratory rate, and immobile, which signifies the onset of anesthesia.
3. Remove the animal from the induction chamber and place the face mask or nosecone over the muzzle of the animal to maintain anesthetic delivery.
4. Connect the tubing from the induction chamber to the face mask or nosecone, adjust the dial on

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the vaporizer to deliver 1–3% isoflurane, and adjust the flowmeter to deliver 1L of oxygen per minute for maintenance anesthesia.

5. Apply a petroleum-based artificial tear ointment to the eyes to prevent corneal desiccation.
6. Assess the depth of anesthesia, including factors such as respiration rate, depth, and response to toe pinch (pedal withdrawal reflex), before making the surgical incision. Adjust the vaporizer dial to 1–3% to maintain the appropriate anesthetic level for the duration of the surgery.
7. Optional: To maintain hydration, postoperatively inject warmed (35–36°C) lactated Ringer's solution or 0.9% NaCl (saline) subcutaneously between the shoulder blades. Use 10–40mL/kg for the mouse (do not exceed 1mL per site) and 5–10mL/kg for the rat (do not exceed 5mL per site).
8. Maintain continuous monitoring throughout anesthesia and recovery, ensuring regular assessment and documentation of anesthetic depth and respiratory rate at intervals of no less than every 15 minutes. Documentation facilitates recognition of trends or patterns to inform and refine subsequent anesthetic use.
9. At the end of the procedure, turn the vaporizer off and deliver 100% oxygen to the animal for ~5min.

Reference:

[1] Oh SS, Narver HL. Mouse and Rat Anesthesia and Analgesia. *Curr Protoc.* 2024;4(2):e995.

Background

Isoflurane is a widely used inhalational anesthetic with a potent anesthetic effect, rapid onset, and quick elimination^[1]. Isoflurane plays an important therapeutic role in cerebral ischemia-reperfusion injury by regulating the production of vascular endothelial growth factor (VEGF) and CD34 via the sonic hedgehog (Shh)/Gli signaling pathway^[2]. Isoflurane inhibits electron transfer in respiratory complex I, with concerted downstream effects on membrane potential, ATP availability, and reactive oxygen species (ROS) flux^[3]. After 2h of Isoflurane exposure, the human ovarian epithelial carcinoma cell line SK-OV3 and the non-small-cell lung carcinoma (NSCLC) lines A549 and H1299 all exhibited significantly enhanced proliferation and migration^[4–5]. In C57/BL/6J mice, a 2h inhalation of 1.4% Isoflurane produced a marked increase in Bax mRNA and protein expression (protein rose from 100% to 170%) and a concurrent decrease in Bcl-2 mRNA and protein expression (protein fell from 100% to 61%) in neurons^[6]. Compared with the cerebral ischemia–reperfusion (I/R) injury group, rats inhaling 1.5% or 3.0% Isoflurane for 60min showed markedly lower neurobehavioral deficit scores and smaller infarct volumes^[7].

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References:

- [1] Saha P, Das A, Chatterjee N, et al. Impact of anesthetics on oncogenic signaling network: a review on propofol and isoflurane. *Fundam Clin Pharmacol*. 2022;36(1):49-71.
- [2] Chen SJ, Yuan XQ, Xue Q, et al. Current research progress of isoflurane in cerebral ischemia/reperfusion injury: a narrative review. *Med Gas Res*. 2022;12(3):73-76.
- [3] Rodriguez E, Peng B, Lane N. Anaesthetics disrupt complex I-linked respiration and reverse the ATP synthase. *Biochim Biophys Acta Bioenerg*. 2025;1866(1):149511.
- [4] Iwasaki M, Zhao H, Jaffer T, et al. Volatile anaesthetics enhance the metastasis related cellular signalling including CXCR2 of ovarian cancer cells. *Oncotarget*. 2016;7(18):26042-26056.
- [5] Zhang W, Shao X. Isoflurane Promotes Non-Small Cell Lung Cancer Malignancy by Activating the Akt-Mammalian Target of Rapamycin (mTOR) Signaling Pathway. *Med Sci Monit*. 2016;22:4644-4650.
- [6] Zhang Y, Dong Y, Wu X, et al. The mitochondrial pathway of anesthetic isoflurane-induced apoptosis. *J Biol Chem*. 2010;285(6):4025-4037.
- [7] Wang S, Yin J, Ge M, et al. Transforming growth-beta 1 contributes to isoflurane postconditioning against cerebral ischemia-reperfusion injury by regulating the c-Jun N-terminal kinase signaling pathway. *Biomed Pharmacother*. 2016;78:280-290.

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