Product sheet

SCC-4 Cells | 305384

General information

Description	SCC-4 is a human tongue squamous cell carcinoma (SCC) cell line widely used in cancer research to explore mechanisms of oral cancer progression, apoptosis, and response to chemotherapeutic agents. Oral squamous cell carcinoma is a common malignancy in the oral cavity and is often linked to lifestyle factors such as tobacco use and alcohol consumption. SCC-4 cells are characterized by their aggressive nature and are used to model tumor behavior and treatment resistance in vitro. Studies using SCC-4 have shown that several compounds, such as rhein, emodin, and berberine, induce apoptosis through both intrinsic (mitochondria-dependent) and extrinsic (death receptor-mediated) pathways. Rhein induces S-phase cell cycle arrest and apoptosis through endoplasmic reticulum stress, ROS generation, and mitochondrial dysfunction, triggering the activation of caspase-8, -9, and -3. Similarly, emodin was shown to cause G2/M-phase arrest and induce apoptosis by disrupting mitochondrial membrane potential and promoting cytochrome c release. Berberine also induces apoptosis in SCC-4 cells by enhancing ROS production, increasing intracellular Ca2+, and decreasing mitochondrial membrane potential, thereby activating caspase-9 and caspase-3 pathways. These findings demonstrate that SCC-4 is an effective model for studying the molecular mechanisms of apoptosis in response to potential anticancer agents, providing insight into therapeutic strategies targeting oral squamous cell carcinoma.
Organism	Human
Tissue	Tongue
Disease	Squamous cell carcinoma
Synonyms	SCC 4, SCC4

Characteristics

Age	55 years
Gender	Male
Ethnicity	Caucasian
Morphology	Epithelial-like
Growth properties	Adherent

Regulatory Data

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Citation	SCC-4 (Cytion catalog number 305384)
Biosafety level	1
NCBI_TaxID	9606
CellosaurusAccession	CVCL_1684

Biomolecular Data

Mutational profile	Mutation: TP53, p.Pro151Ser (c.451C>T)

Handling

Culture Medium	DMEM:Ham's F12 (1:1), w: 3.1 g/L Glucose, w: 2.5 mM L-Glutamine, w: 15 mM HEPES, w: 0.5 mM Sodium pyruvate, w: 1.2 g/L NaHCO3 (Cytion article number 820400a)
Supplements	Supplement the medium with 10% FBS and 400 ng/mL hydrocortisone
Dissociation Reagent	Accutase
Subculturing	Remove the old medium from the adherent cells and wash them with PBS that lacks calcium and magnesium. For T25 flasks, use 3-5 ml of PBS, and for T75 flasks, use 5-10 ml. Then, cover the cells completely with Accutase, using 1-2 ml for T25 flasks and 2.5 ml for T75 flasks. Let the cells incubate at room temperature for 8-10 minutes to detach them. After incubation, gently mix the cells with 10 ml of medium to resuspend them, then centrifuge at 300xg for 3 minutes. Discard the supernatant, resuspend the cells in fresh medium, and transfer them into new flasks that already contain fresh medium.
Freeze medium	As a cryopreservation medium, we use complete growth medium (including FBS) + 10% DMSO for adequate post-thaw viability, or CM-1 (Cytion catalog number 800100), which includes optimized osmoprotectants and metabolic stabilizers to enhance recovery and reduce cryo-induced stress.

Thawing and Culturing Cells	1. Confirm that the vial remains deeply frozen upon delivery, as cells are shipped on dry ice to maintain optimal temperatures during transit. 2. Upon receipt, either store the cryovial immediately at temperatures below -150°C to ensure the preservation of cellular integrity, or proceed to step 3 if immediate culturing is required. 3. For immediate culturing, swiftly thaw the vial by immersing it in a 37°C water bath with clean water and an antimicrobial agent, agitating gently for 40-60 seconds until a small ice clump remains. 4. Perform all subsequent steps under sterile conditions in a flow hood, disinfecting the cryovial with 70% ethanol before opening. 5. Carefully open the disinfected vial and transfer the cell suspension into a 15 ml centrifuge tube containing 8 ml of room-temperature culture medium, mixing gently. 6. Centrifuge the mixture at 300 x g for 3 minutes to separate the cells and carefully discard the supernatant containing residual freezing medium. 7. Gently resuspend the cell pellet in 10 ml of fresh culture medium. For adherent cells, divide the suspension between two T25 culture flasks; for suspension cultures, transfer all the medium into one T25 flask to promote effective cell interaction and growth. 8. Adhere to established subculture protocols for continued growth and maintenance of the cell line, ensuring reliable experimental outcomes.
Incubation Atmosphere	37°C, 5% CO_2, humidified atmosphere.
Shipping Conditions	Cryopreserved cell lines are shipped on dry ice in validated, insulated packaging with sufficient refrigerant to maintain approximately −78 °C throughout transit. On receipt, inspect the container immediately and transfer vials without delay to appropriate storage.
Storage Conditions	For long-term preservation, place vials in vapor-phase liquid nitrogen at about −150 to −196 °C. Storage at −80 °C is acceptable only as a short interim step before transfer to liquid nitrogen.

Quality Control & Molecular Analysis

Sterility	Mycoplasma contamination is excluded using both PCR-based assays and luminescence-based mycoplasma detection methods. To ensure there is no bacterial, fungal, or yeast contamination, cell cultures are subjected to daily visual inspections.