



Alizarin Red

For research use only

Catalogue number: BI-1801

Product Description

Alizarin or 1,2-dihydroxyanthraquinone (also known as Mordant Red 11 and Turkey Red[1]) is an organic compound with formula $C_{14}H_8O_4$ that has been used throughout history as a prominent red dye, principally for dyeing textile fabrics. Historically, it was derived from the roots of plants of the madder genus.

Alizarin Red, an anthraquinone derivative, may be used to identify calcium in tissue sections and cultured cells in vitro. Also, Alizarin red is a commonly used stain to identify calcium containing osteocytes in the differentiated culture of both human and rodent mesenchymal stem cells. Although the reaction is not strictly specific for calcium, and magnesium, manganese, barium, strontium, and iron could react with the solution, since these elements usually do not occur in sufficient concentrations, they do not expect to interfere with the staining. Calcium forms an Alizarin Red- S-calcium complex in a chelation process and the end product is a bright red stain.

Specification

- **Molecular weight:** 342,26
- **Molecular formula:** $C_6H_4COC_6H(OH)_2(SO_3Na)CO$
- **Appearance:** Red liquid
- **Solubility:** Soluble
- **pH indicator:** 4.6 (yellow) to 6.0 (red)
- **Storage:** 2-8°C, protect from light
- **Shelf life:** 48 months

How to Use

Alizarin Red S staining

1. Remove culture medium from each well and gently wash cells 3 times with 1xPBS.
2. Fix the cells in 4% formaldehyde for 15 minutes at room temperature.
3. Remove fixative and wash the cells 3 times with distilled water.
4. Remove distilled water completely and add 1 mL of 40 mM Alizarin Red S per well. Incubate at room temper 20 - 30 min with gentle shaking.
5. Remove the dye and wash the cells 5 times with distilled water.
6. If required, inspect the cells using a phase microscope and take images. (Optional)
7. Tilt the plates for 2 min to facilitate removal of excess water.
8. Store plates at -20°C prior to dye extraction.



Inhibitors

Metal chelating agents such as cysteine, EDTA or active oxygen species.

Citations

1. Alizadeh, Effat, et al. "The effect of dimethyl sulfoxide on hepatic differentiation of mesenchymal stem cells." *Artificial cells, nanomedicine, and biotechnology* 44.1 (2016): 157-164.
2. Alizadeh, Effat, et al. "Upregulation of MIR-122 via trichostatin a treatments in hepatocyte-like cells derived from mesenchymal stem cells." *Chemical biology & drug design* 87.2 (2016): 296-305.
3. Baharara, Javad, et al. "The osteogenic differentiation stimulating activity of Sea cucumber methanolic crude extraction on rat bone marrow mesenchymal stem cells." *Iranian journal of basic medical sciences* 17.8 (2014): 626.
4. Jafarzadeh-Tabrizi, Sepideh, et al. "A Biomimetic Emu Oil-Blended Electrospun Nanofibrous Mat for Maintaining Stemness of Adipose Tissue-Derived Stem Cells." *Biopreservation and biobanking* 16.2 (2018): 66-76.