Oil-Red-O
For research use only

Catalogue number: BI-1802

Product Description

Oil-red-O is a lipid soluble lysochrome (fat stain) that has greater solubility in lipoid substances than in usual hydroalcoholic dye solvents. It is used to stain lipids, fatty acids, triglycerides, and cholesterol in frozen tissue samples, histological sections, and monolayer adipocyte cultures. It has very high depth of red color and yet leaves the cellular structures clear. In cell culture, Oil-red-O is most commonly used for visualization and quantification of adipogenic differentiation of mesenchymal stem cells in vitro. Oil droplets in mature adipocytes take up the dye and appear red in color.

Specification

- **Molecular weight:** 408.49
- **Molecular formula:** C26H24N4O
- **Appearance:** Red liquid
- **pH:** pH 4.6 (yellow) to 6.0 (red)
- **Storage:** 10°C-30°C
- **Shelf life:** 48 months
- Cell Culture Tested

How to Use

1. Culture and treat cultured cells in tissue culture plate as needed (see other protocols).
2. Take the plate (35-mm) out of incubator and remove the medium.
3. Add ~2 ml of PBS to wash the cells and remove PBS completely.
4. Add 2 ml of 10% formalin (room temperature) and incubate for 10 min at RT.
5. Discard formalin and add 2 ml fresh formalin. Incubate for at least 1 hour, or longer (Cells can be kept in formalin for a couple of days before staining. Wrap with parafilm and cover with aluminum foil to prevent cells from drying).
6. Remove formalin with a pipette.
7. Wash cells with 2 ml of ddH2O twice.
8. Wash cells with 2 ml of 60% isopropanol for 5 min at RT.
9. Let the cells dry completely at RT. If possible, use a hairdryer to dry.
10. Add 1 ml of Oil Red O working solution and incubate at RT for 10 min.
11. Remove Oil Red O solution and immediately add ddH2O. Wash the cells 4 times with ddH2O.
12. Acquire images under the microscope for analysis.
13. Remove all the water and let dry.
14. Elute Oil Red O dye by adding 1 ml of 100% isopropanol and incubate for 10 min with gently shaking.
15. Pipet the isopropanol with Oil Red O up and down several times to ensure that all Oil Red O is in the solution.
16. Transfer the solution to a 1.5-ml tube.
17. Measure OD at 500 nm using100% isopropanol as blank.

References

1. Gregory CA, Gunn WG, Peister A, Prockop DJ. (2004) “An Alizarin red-based assay of mineralization by adherent cells in culture: comparison with cetylpyridinium chloride extraction.” Analytical Biochem. 329: 77-84.

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 mesenchy mal 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. Jalilzadeh-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.