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RESUMO

Effects of Di-(2-ethylhexyl) phthalate on vascular smooth muscle cells

Every year million tons of plastic are produced around the world and humans are increasingly exposed to them. This constant exposure has raised some concerns against human health and substances leaching from plastics, such as phthalates. These compounds, used to give flexibility to polyvinyl chloride (PVC), are endocrine-disrupting compounds because they have the ability to interfere with hormone pathways. Phthalates are not covalently bound to the plastic, which makes them susceptible to go to the atmosphere, foods and consequently into body fluids. Some studies have suggested a connection between phthalates and cardiovascular diseases. In vascular smooth muscle (VSM) cells, the regulation of Ca^{2+} flux is pivotal and important for contraction. Changes in this influx can be involved in the pathophysiology of some cardiovascular diseases. Therefore, we study the effect of di-(2-ethylhexyl) phthalate (DEHP), one of the most studied phthalates, on the activity of calcium channels (L-type, LTCC) and VSM contractility using A7r5 cell line. To measure the activity of LTCC, the whole cell configuration of Patch Clamp technique was used. To analyze the VSM cell contractility we used the Planar Cell Surface Area (PCSA) technique. The effect of DEHP (1 nM-100 μ M) on LTCC activity and VSM cell contractility was analyzed. Preliminary results show that DEHP inhibits the LTCC and could induce relaxation of the VSM cell.

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