Invention relates to bioreactor for cultivating cell cultures, which has a cylindrical body, a package of plates in the form of disks for cell adhesion and development, and an aeration device. The aeration device is located in the jacket of the apparatus and has a hydrophobic silicone coil inside, which forms channels for circulation and intensification of the aeration process of the culture medium. The adhesion disks have segments removed along the edge on one side, and when the plates are packaged, the segments on adjacent disks are staggered. This bioreactor is supplied already assembled, sterile and ready for use, and is disposed of after the process is complete. Due to its design features, it is possible to increase the yield of biological agents and ensure the payback of the apparatus.