



二氧化硅微球(Silica microsphere)

核酸纯化

硅胶微球在核酸纯化方面得到了广泛应用。原理简介如下：

1. 硅胶微球表面带负电荷，将其加入过量二价阳离子溶液中，搅拌均匀；微球表面的每个负电荷吸附一个 Ca^{2+} 或 Mg^{2+} ，因而其表面的负电荷转换为正电荷；
2. 超纯水洗掉多余的 Ca^{2+} （或 Mg^{2+} ）；
3. 加入样品（血清，溶菌液等），带负电荷的 DNA（或 RNA）吸附在带正电荷的硅胶微球表面；
4. 加入洗涤液，洗掉样品中的杂质；
5. 加入洗脱液，DNA（或 RNA）与硅胶微球分离；离心；得到纯化的 DNA（或 RNA）。

特点：

1. 微球容易分散；
2. 微球粒径均一，离心分离时，沉降速度一致，不会导致大分子量的 DNA 断裂；
3. 微球无孔，吸附、洗脱速度快，小分子量的 DNA（或 RNA）无损失；
4. 分离的 DNA（或 RNA）纯度高。

Nucleic Acid Isolation

The silica microspheres has found the special application of nucleic acid isolation. The breif introduction is as follows,

1. The surface of silica microspheres carrys negative charges. Putting microspheres into a solution of Ca^{2+} (or Mg^{2+}) ions, with good mixing, then every negative charge will pick up a Ca^{2+} (or Mg^{2+}). This results in a positively charged surface.
2. Wash the microspheres with very clean deionized water to remove excess Ca^{2+} (or Mg^{2+}).
3. Negatively charged DNA (or RNA) should then bind directly onto positively charged silica microspheres.
4. Washing the silica microsphere to remove the impurities of sample
5. Elute the DNA (or RNA) from the surface of silica microspheres; spin; remove the DNA (or RNA)-containing supernatant to clean tube.

Features:

1. Uniform silica beads are easy to resuspend
2. Bead uniformity prevents shearing of high molecular weight DNA
3. Nonporous, no low molecular weight DNA (or RNA) loss
4. Highly pure DNA (or RNA)