



二水草酸钙的热力学转化及海藻多糖的稳定作用

Thermodynamical Transformation of Calcium Oxalate Dihydrate and Its Stabilization by Algal Sulfated Polysaccharide

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英文关键词: [calcium oxalate monohydrate](#) [calcium oxalate dihydrate](#) [algal sulfated polysaccharide](#) [seed crystals](#) [crystallization](#)

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中文摘要:

草酸钙结石的形成与尿液中草酸钙的存在形式密切相关, 一水草酸钙(COM)促进尿石症形成, 而二水草酸钙(COD)易随尿液排出体外。本文采用体外模拟方法, 比较研究了COD晶体在水溶液、正常人尿液和结石患者尿液3个不同体系中的稳定性及海藻龙须菜多糖(SPS)对COD的稳定作用。在水溶液和患者尿液中, 不但COD转化率高, 而且得到的转化产物COM晶体聚集程度大; 而在正常人尿液中, COD转化率低, 转化产物聚集程度较小。COD在不同体系中转化的速度依次为: 水溶液>患者尿液>正常人尿液。从海藻龙须菜中提取的硫酸多糖可以稳定COD的存在并减小COM的聚集, 这有利于阻止草酸钙结石的形成, 因此, 海藻龙须菜多糖有可能用于防止草酸钙结石形成。

英文摘要:

The formation of calcium oxalate (CaOxa) stones is closely related to its forms existing in urines. Calcium oxalate monohydrate (COM) can promote the formation of urolithiasis, while calcium oxalate dihydrate (COD) is easily expelled from the body. In this article, the stability of COD crystals was investigated in vitro in three different systems: water, urine from healthy people and urine from lithogenic patient. The effect of sulfated polysaccharide extracted from algal *Gracilaria lemaneiformis* on stability of COD crystals was also investigated. In aqueous solution and in lithogenic urine, not only the transformation rate of COD into COM was higher, but also was higher the aggregation degree of the transformed product COM crystals. The transformation rate of COD in different systems followed the order: aqueous solution > lithogenic urine > healthy urine. The sulfated polysaccharide extracted from algal *Gracilaria lemaneiformis* can stabilize COD and reduce the aggregation of COM, thus beneficial to preventing from the occurrence of CaOxa stone. Hence, *Gracilaria lemaneiformis* polysaccharide is probably used in the prevention of CaOxa stone formation.

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