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L-精氨酸生产工艺设计之阿布丰王创作

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摘要

L-精氨酸是人体和植物体内的半必需氨基酸，也是生物体尿素循环的一种重要的中间代谢物。L-精氨酸在医药方面、保健饮品方面、畜牧业方面都具有广泛的应用。本设计综述了 L-精氨酸的应用和进展，设计了年产 150t L-精氨酸的工艺流程，对比了弱酸性阳离子树脂和 DR1 树脂提取 L-精氨酸的优缺点。以原有的生产工艺为根基，本次设计采用发酵法，以淀粉为原料，以玉米浆为辅料，以黄色短杆菌为生产菌种，最主要的是在下游提取工艺中，采用 DR1 树脂提取 L-精氨酸，提取效率较高。

本设计以年产 150t 吨 L-精氨酸的生产规模，列举了生产工艺流程图，进行了物料衡算和设备选型和发酵罐和种子罐的尺寸，分析对比了弱酸性阳离子树脂和 DR1 树脂提取 L-精氨酸两种工艺的经济效益，得出了 DR1 树脂提取工艺优于弱酸性阳离子树脂提取工艺。

关键词：L-精氨酸，发酵法，提取，工艺设计

Abstract

L - arginine is a semi-essential amino acids in the humans and animals, Is also an important intermediate of the urea cycle and metabolism of organisms. L-arginine has an extensive application in medicine, health drink and the livestock industry. This set gave an overview of development and application of l-arginine, Designing a production capacity of 150t L-arginine process, Compared with weak acid cation-exchange resin extraction of L-arginine and DR1 resin advantages and disadvantages The design uses a fermentation method with starch, corn syrup as adjunct, for the production of *brevibacterium flavum*

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strain, Most notably in the downstream extraction process, Design DR1 to extract L-arginine to get a high extraction efficiency.

Design a scale of production to get 150t L-arginine. Listing a production of flow chart, the material balance and the selection of equipment, and the size of fermentation tank and seed tank are designed, Analysing and comparing two kinds of processes of extraction of L-arginine about acid cation-exchange resin and DR1 resin statistics, we can see the Drew DR1 resin extraction technology is superior to weak acid cation-exchange resin extraction process.

Keywords: L-arginine, Fermentation, Extraction, A designed process

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