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## Optimization of Mixotrophic Culture Parameters of Selenium-enriched Yeast with Box-behnken Design

Yin Hongfei, Shen Chang, Gu Zhenxin, Han Yongbin

(The Key Laboratory of Agricultural and Animal Products Processing and Quality Control, Ministry of Agriculture, Nanjing Agriculture University, Nanjing 210095, China)

**ABSTRACT** In this article, germinated brown rice juice, beerwort and soybean sprout juice were utilized as the natural media and the culture conditions of selenium-enriched yeast (*Saccharomyces cerevisiae*), which affects the accumulation of biomass yield and total Se yield were optimized with Box-behnken design. The regression equation expressing the relationship between total Se yield and culture conditions was established by manual analysis. The R-squared in the model of regression equation was 0.997, meaning the established equation could predict the total Se yield well at the range of factors in this design. It was indicated that the optimum culture conditions were found to be temperature 27.4℃, initial pH value 5.8, volume 89.73 mL. Under those conditions, it was predicted that the highest production of total Se was 4.48 mg/L, which was 1.27 times higher than initial yield before optimization.

**Key words** Box-behnken design, yeast, Se, culture conditions

信息窗

### 法国葡萄酒行业引入新世界酿酒科技

为了与新世界葡萄酒国家展开竞争,法国葡萄酒行业将进行一次大革命,废除旧法规,采用新世界酿造技术。

法国政府公布了一份长达16页的葡萄酒行业五年计划,计划指出,法国葡萄酒行业将从三个方面进行改革。

第一,酿酒技术及酒标改革。法国葡萄酒标将以“Vignobles de France”(法国葡萄酒)字样代替“VIN DE TABLE”(日常餐酒)。酒标上还会注明酿酒葡萄品种及年份,同时采用成本较低的新世界酿酒技术,如使用橡木片陈酿、添加单宁、以山梨酸作为防腐剂、加入浓缩的葡萄浆来增加葡萄酒的甜味等。第二,地区葡萄酒(VIN DE PAYS)将改为IGP(受保护的地域标识)。第三,以(AOP原产地命名保护品牌)取代现有AOC(原产地控制命名)体系。

法国国家葡萄酒行业组织Viniflor,主席Georges Malpel说:“将适当保留一些传统,同时要从小作坊向大生产转变。”

过去,法国一直引导世界葡萄酒潮流,如今出口量大跌,低于意大利、西班牙。虽然目前法国酒出口额占国际市场的35%,但这全靠高档香槟、波尔多、勃艮地葡萄酒拉动。随着中国、印度等葡萄酒国家兴起,法国将面临更大的竞争压力。因此说法国葡萄酒行业改革势在必行。

的定性、定量检测,不过不同的酰基-L-肉碱需要对盐溶液组成进行适当的调整。

本方法的显色反应是在有机溶液-盐溶液两相体系中进行的,而在有机溶液-盐溶液-水或有机溶液-水体系中,溴酚蓝-酰基肉碱离子对会被萃取到水相中,因此本方法操作过程中应严防水分混入。

1,2-二氯乙烷的毒性相对较大,能否采用较低毒性的 1,1-二氯乙烷(毒性仅为前者的 1/10)还有待于进一步研究。

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# Colorimetry Method for Determination of Acylcarnitines in System of Esterification of L-carnitine

Tian Jinqiang<sup>1,2</sup>, Wang Qiang<sup>1,2</sup>, Zhou Sumei<sup>2</sup>

1( State Key Laboratory of Food Science and Technology, School of Food Science and Technology, Jiangnan University, Wuxi 214122, China )

2(Institute of Food Science & Technology, Chinese Academy of Agricultural Sciences, Beijing 100094, China)

**ABSTRACT** Acetyl-carnitine was sampled to demonstrate colorimetry method for determination of Acylcarnitines in system of esterification of Carnitine. Color reaction was performed in organic solution-salt solution biphasic system. The organic solution was 1,2-Dichloroethane-Isoamyl alcohol mixture (V/V=96 : 4) added Bromophenol blue (per 100 mL added 0.05 g ). The salt solution was 55%K<sub>2</sub>HPO<sub>4</sub> aqueous solution added Na<sub>2</sub>CO<sub>3</sub> (per 100 mL added 14 g), under the temperature of color reaction between 12 °C to 25 °C. There was a linear relationship ( $R^2 > 0.99$ ) between OD value and Acetyl-carnitine content which range ranges from 0.0045 g~0.0254 g in above-mentioned biphasic system. To analyze the system of esterification of Carnitine, the recovery was 99.53%~103.33%, the RSD was below 4.30%, and the detection limit was 0.441 mg. The method was not disturbed by Carnitine. Taken together, an effective, economic and rapid method for determination of Acylcarnitines in system of esterification of Carnitine was established.

**Key words** acylcarnitines, acetyl-carnitine, colorimetry method, esterification

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## 粉丝废水中提取食用蛋白技术获得成功

日前,被喻为“废水里捞金”的粉丝浆液中提取分离蛋白技术在烟台双塔食品股份有限公司获得成功,产品达到了食品级要求,这一技术突破,填补了从绿豆、豌豆中提取植物蛋白的国内空白,解决了招远市百年来对粉丝深加工的一个难题。

该技术采用碱溶酸沉、絮凝剂促凝、酶水解和生物发酵技术脱苦脱腥,以及挤压改性技术,从绿豆、豌豆粉丝浆液中提取淀粉的同时提取分离蛋白和膳食纤维。经资深专家组成的项目鉴定委员会鉴定,蛋白回收率达到 95.5%,膳食纤维回收率 95%以上,分离蛋白的纯度达 90%以上,口感、功能性等各项指标均达到国际先进水平。

该项技术是烟台双塔食品股份有限公司先后同北京西贝技术研究所、武汉工业学院食品学院等科研单位历时 5 年研发成功的,在经过研发、小试、中试等生产试验阶段后,已进入工业化生产阶段。

绿豆和豌豆是招远很多粉丝企业生产的原料,此前提取蛋白只是停留在饲料级上,而食用级蛋白的提取成功,将大大提高粉丝行业的经济效益,增加产品的科技含量和附加值,而且能有效解决粉丝生产过程中的环境污染问题。