

3 结 论

乳化剂加入到蛋糕中,可与直链淀粉相互作用,形成直链淀粉-乳化剂复合物,阻止直链淀粉的结晶,进而使保存一定时间的蛋糕的硬度降低,蛋糕的弹性、回复性和咀嚼性也要比不加乳化剂的好。

不同的乳化剂对蛋糕质构的影响并不相同,无论在抗老化还是改善蛋糕质构方面,与直链淀粉络合能力强的乳化剂都要比络合能力弱的乳化剂好。

淀粉和乳化剂相互作用是一个非常复杂的过程,对其进一步研究,将有助于乳化剂在食品中更好的应用。

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Formation of Amylose-emulsifier Complexes and Their Anti-staling Effects in Cake

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ABSTRACT Amylose-emulsifier complexes were formed when emulsifiers added in starchy foods when cooking or baking. This complex could improve the quality of products and prolong the shelf-life. In this paper, the complexes capacity between amylose and emulsifier were measured by DSC and Blue Value, and the relation between the quality and retrogradation of cake and the capacity of amylose-emulsifier complexes were studied. The results showed that the quality and anti-staling of cake using high complexes capacity emulsifier was better than low complexes capacity emulsifier. The density, specific volume and texture of cake were also studied. The result indicated that the cake density decreased while its specific volume increased; the hardness decreased, resistance, springiness and chewness were all improved.

Key words amylose-emulsifier complexes, anti-staling, blue value, texture, DSC

日本发布果酱质量标签标准修正案概要

2007年9月17日,日本发布果酱的质量标签标准修正案概要。果酱的质量标签标准将做出以下修订:1. 通过将“糖”的范围指定为“糖、糖醇和蜂蜜”,阐明果酱的现行定义;2. 除食品添加剂之外,使所有成份的标示成为强制性的;3. 修订用切成两半的调和草莓制成的蜜饯的定义,在这种情况下草莓用作配料;以及4. 使打算作为蜜饯的果酱能够标示为“蜜饯”,以免除将并非出于制造商本意而包含水果原形的果酱如此标示。

的蛋白易以包涵体的形式积累,降低诱导温度可提高蛋白的可溶性。本文在初始 OD_{600} 为 0.6~0.8 的条件下,分别于 20、25、28、30、34、37℃ 诱导 7 h,使 IPTG 终浓度达到 0.8 mmol/L。

由图 7 可发现,当诱导温度为 28℃ 时,中性蛋白酶的表达量为 21.5%,与 30℃ 时的表达量仅仅相差 0.7%。考虑到低温诱导会对酶的活性更有利,故选择 28℃ 为最适诱导温度。

3 结论

用 PCR 方法扩增得到中性蛋白酶基因,并利用表达载体 pET-22b(+) 在 *E. coli* BL21(DE3) 中实现了高效表达。试验表明,当初始 OD_{600} 值为 0.6~0.8, IPTG 终浓度为 0.8 mmol/L, 28℃ 诱导 7 h 后收获菌体,在此条件下重组菌 pET22b-npr/BL21 的中性蛋白酶表达量最高,可达到 21.5% 左右,中性蛋白酶的活力达到了 21 240 U/mL,比出发菌株提高了近 10 倍,为该酶的大规模工业生产奠定了基础。

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Research on Expression Condition of Neutral Protease in the *E. coli*

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ABSTRACT The neutral protease gene from *Bacillus subtilis* was amplified by PCR and cloned into pET-22b plasmid to create the recombinant plasmid pET22b-npr. Then we got the recombinant strain by transforming pET22b-npr into *E. coli* BL21. When it was induced by IPTG, the neutral protease could be produced with a high level. In this study, the optimal condition of expression was obtained. When the OD_{600} of culture reached 0.6~0.8, IPTG was added to give a final concentration of 0.8 mmol/L. Incubating the culture at 28℃ for 7h, the expression content of neutral protease reached the most. The specific protein band about 43 ku was shown in the SDS-PAGE gel.

Key words *Bacillus subtilis*, *E. coli*, neutral protease, induced expression

政策
法规
标准

日本修订苯菊酯等的残留限量

2007年9月17日,日本发布G/SPS/N/JPN/196号通报,修订食品卫生法项下食品与食品添加剂标准规范(修订杀虫剂残留标准),拟定苯菊酯(Bifenthrin)、百治磷(Dicrotophos)、三唑类磺胺(Penoxsulam)及双唑草腈(Pyraclonil)的残留限量(MRLs)。

涉及的产品有:肉及可食用内脏;乳及蛋类;可食用蔬菜及某些根茎、块茎植物;可食用水果及坚果,柑橘/瓜;香料;粮食;碾磨产品;油籽及油果;杂粮,种子与果实。这些拟订标准经一定宽限期后生效。

莽皮提取物对猪油的抗氧化活性的 POV 值分别列入表 3、表 4, 并与抗氧化剂 BHT 比较。

表 3 50 h 时不同浓度莽皮提取物对猪油的抗氧化活性

浓度/%	莽皮提取物					BHT
	空白	0.2	0.1	0.05	0.02	0.02
POV/mg · kg ⁻¹	52.5	1.0	1.5	38.0	43.1	20.0

表 4 70 h 时不同浓度莽皮提取物对猪油的抗氧化活性

浓度/%	莽皮提取物					BHT
	空白	0.2	0.1	0.05	0.02	0.02
POV/mg · kg ⁻¹	120.2	4.0	7.1	82.0	90.5	42.5

由表 3、表 4 可知, 随着莽皮提取物浓度的增大, 对猪油的抗氧化能力增强。当莽皮提取物在猪油中的添加量为 0.1% 时, 其抗氧化能力优于 0.02% 抗氧化剂 BHT, 但添加量为 0.02% 时, 却不如同浓度的 BHT。

3 结论

(1) 莽皮色素含量高, 提取方法简单, 提取率达 4.8%。

(2) 实验结果表明: 莽皮提取物有较强的抗氧化活性。当莽皮提取物的浓度为 0.10 g/L 时, 莽皮提取物对羟自由基的清除率为 67.52%, 是同浓度常用抗氧化剂 BHT 的 95.91%; 对 O₂⁻ · 自由

基的抑制率为 48.45%, 是常用抗氧化剂 BHT 的 78.80%。莽皮提取物的抗氧化活性随着浓度的增大而增强。实际上当莽皮提取物的浓度很小仅为 0.10 g/L 时, 清除自由基的能力已相当显著。

(3) 莽皮提取物有阻断猪油脂质过氧化作用, 其 0.1% 提取物对猪油的抗氧化效果优于 0.02% 的食品抗氧化剂 BHT, 且其活性具有剂量效应关系。

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Study on Antioxidant Activities of Eleocharis Tuberosa Peel

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ABSTRACT Antioxidant activity of extract of *Eleocharis Tuberosa* peel were studied by pyrogallol autoxidation method, Feton reaction and Na₂S₂O₃-I₂ titrimetric method. The results showed: Antioxidant activity was very strong; at the concentration of 0.10 g/L, The inhibition rate of superoxide anion free radical(O₂⁻ ·) was 48.45%, The scavenging rate of hydroxyl free radical (·OH) was 67.52%. Adding 0.1% (molar percentage) of the extracts to lard, its antioxidant activity was better than that of 0.02% BHT. The extracts from peel showed higher activities than from juice. Extract of *eleocharis tuberosa* peel was a natural resource of strong antioxidant activity.

Key words extract of *eleocharis tuberosa* peel, antioxidant activity, pyrogallol autoxidation method, feton reaction

政策法规标准

三项饮料产品标准在京顺利通过审定

2007年9月27~28日, 中国饮料工业协会和全国食标委饮料分委会共同组织了《茶饮料》国家标准、《含乳饮料》国家标准、《植物蛋白饮料 豆奶(豆浆)和豆奶饮料》行业标准3项标准的审定会。3项标准均由中国饮料工业协会技术工作委员会牵头起草, 目前, 技术工作委员会已完成包括这3项标准及《饮料通则》、《浓缩苹果汁》、《植物蛋白饮料杏仁露》、《植物蛋白饮料 椰子汁及复原椰子汁》、《碳酸饮料》在内的8项国家、行业标准。

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Measurement of Volatile Compounds of Changyu XO Brandy by Liquid-liquid Extraction Followed by GC-MS

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ABSTRACT The Changyu XO brandy was extracted by liquid-liquid extraction and the volatile compounds were analyzed by GC-MS. These compounds were identified by comparison with mass spectrometric data, pure standard and retention indices from the literature. The results showed that a total of 108 volatile compounds were identified. The compounds included 41 esters, 21 substituted benzene and derivatives, 15 alcohols, 11 acetals and furans, 9 acids, 6 terpenes, 4 aldehydes and ketones.

Key words brandy, volatile compound, liquid-liquid extraction, GC-MS, analysis

中国将在进出口食品检验检疫行标中增设国际通行检测方法

从2007年12月1日起,中国出入境食品检验检疫行业标准中将增设目前国际通用的Petrifilm™测试片法,以使行业标准进一步与国际接轨,提高出口食品的安全性。

据Petrifilm™测试片法的发明者美国3M公司介绍,这种测试方法相对于传统食品微生物检测手段来说,能在原来的基础上节省3~5天的测试时间,大大缩短食品库存的时间,提高食品生产商的货物周转率。此外,这种测试方法不需要配制试剂和准备大量的玻璃器皿,操作简便迅速;除纸片外无其他任何废液废物,大大减少或消除对环境的污染,以及试验后的清洗工作,减少了工作量。

目前Petrifilm™测试片法拥有国际化的认证体系,已经获得包括美国FDA、美国AOAC、欧盟Nordic在内的众多国际权威机构的认证,其检测结果在美国、欧洲、澳大利亚、日本、韩国等国家均得到广泛的认可。此次中国出入境食品检验检疫行业标准新增的Petrifilm™测试片法,主要用于对食品中的金黄色葡萄球菌、乳酸菌、大肠杆菌及菌落总数的测定。

此间业内人士认为,中国加入WTO,极大地促进了中国食品和农产品的国际贸易总量,在与国际标准尽快接轨方面,引入方便、快速、标准化、高精度、高灵敏度的微生物检验技术显得十分重要。而此次国家将3M公司的Petrifilm™测试片法作为出入境检验检疫行业标准之一,在行标中扩充国际上广泛认可的快速方法,提高国际标准的采标率,大大满足了进出口贸易的需求。

表 1 产物 β -丁香烯的 ^1H 和 ^{13}C NMR 谱图解析

位置标号	$\delta_{\text{C}}/\text{ppm}$	$\delta_{\text{H}}/\text{ppm}$	位置标号	$\delta_{\text{C}}/\text{ppm}$	$\delta_{\text{H}}/\text{ppm}$
a	48.44	5.29	i	53.56	1.99
b	154.66	—	j	111.61	4.94; 4.82
c	34.76	2.33; 1.99	k	22.60	1.65
d	30.03	2.31; 2.01	l	40.34	2.17; 1.69
e	124.24	2.34	m	32.96	—
f	135.44	—	n	29.71	1.00
g	31.32	2.31; 1.99	p	29.71	1.00
h	28.32	1.50; 1.26			

“—”表示相连碳上无氢;“ppm”是化学位移的单位,表示百万分之一,即 10^{-6}

综合产物的外观特征、质谱分析、红外分析及核磁共振^[6],基本确认所分离化合物为 β -丁香烯。

3 结论

首次从荆条植物中分离得到 β -丁香烯。首先水蒸气蒸馏制备精油,得率 1.2%,然后通过精馏进行初步分离,再采用硅胶柱色谱、含硝酸银的硅胶柱色谱进一步分离得到单体物质 β -丁香烯(纯度 98.2%)。产物结构经过红外、质谱、碳核磁、氢核磁进行了确认。

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Extraction and Separation of β -caryophyllene from Leaf Oil of *Vitex negundo* L. var. heterophyll (Franch.) Rehd

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ABSTRACT Volatile oil was extracted from leaves of *Vitex negundo* L. var. heterophyll (Franch.) Rehd by steam distillation (SD). The extraction yield of volatile oil by SD was 1.2%. First, the volatile oil was rectified. Then the target fraction was further purified by silica gel column chromatography and silica gel impregnated with silver nitrate column chromatography. Finally, β -caryophyllene was analyzed with infrared spectroscopy, gas chromatography-mass spectroscopy (relative peak areas was 98.2%), and nuclear magnetic resonance spectroscopy.

Key words *Vitex negundo* L. var. heterophyll (Franch.) Rehd, volatile oil, separation, β -caryophyllene, structure analysis

政策法规标准

我国将出台萨其玛国家标准

由台资企业徐福记主推的萨其玛质量标准,已获国家标准主管部门正式立项,我国将诞生萨其玛国家质量标准。

随着市民消费水平和口味的提高,携带方便的小包装萨其玛已逐渐走入千家万户的早餐行列。据中国食品工业协会一项调查数据显示,国内每年萨其玛的消费量呈两位数增长,2006年,全国消费者一年吃掉50万吨萨其玛,价格超过50亿元。据悉,目前萨其玛分为南北两派,北派萨其玛个子大,口感较硬、较脆,表面一般附有芝麻;南派萨其玛也称广式萨其玛,口感比较酥软。两种派系的萨其玛制作方式和原料都有所不同。目前,仍有不少违法商贩,在一些三无小作坊里面生产萨其玛,为了让萨其玛蓬松,就添加硼砂。硼砂是一种有毒物质,达到一定食用量时,可损害人的脑、肝、肾脏及皮肤粘膜;其急性中毒症状为呕吐、腹泻、红斑、休克、昏迷等。另外,制作萨其玛不换油,半年都用一锅油,也是一个严重的食品安全问题。