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适宜电子束辐照延长醉泥螺货架期及蛋白质保持

Extending shelf life and keeping protein nutritional value of drunk *Bullacta exarata* by suitable electron beam irradiation

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中文关键词: [电子束辐照](#), [杀菌](#), [醉泥螺](#), [菌落总数](#), [货架期](#), [氨基酸](#)

英文关键词: [electron beam irradiation](#), [sterilization](#), [drunk Bullacta exarata](#), [total plate count](#), [shelf life](#), [amino acid](#)

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中文摘要:

为探明电子束辐照对醉泥螺的杀菌效果及辐照后醉泥螺感官品质与蛋白质营养价值的变化,为生食醉泥螺的辐照保鲜应用提供理论依据。以生食醉泥螺为研究材料,研究不同剂量电子束辐照对醉泥螺菌落总数、感官评分、蛋白质含量及其氨基酸组成的影响,并分析辐照后醉泥螺在冷藏和常温贮藏条件下的货架期变化。结果表明:1)经1~9 kGy剂量电子束辐照,醉泥螺的色泽和形态几乎没有变化,但7、9 kGy剂量组醉泥螺产生异味;2)辐照剂量越高,杀菌效果越好,当醉泥螺的初始菌落总数为1200 cfu/g时,菌落总数降至初始值10%所需的辐照剂量D10为3.46 kGy;3)5 kGy剂量的辐照对醉泥螺的抑菌效果明显,无论是冷藏还是常温贮藏,360 d内菌落总数均未超过5000 cfu/g;3)辐照对醉泥螺蛋白质含量无明显影响($P>0.05$),不改变醉泥螺的限制性氨基酸种类,但经1、3、5 kGy辐照后,氨基酸总量、必需氨基酸总量及各必需氨基酸的氨基酸评分增加;4)结合电子束辐照对醉泥螺菌落总数及感官评分的影响,辐照剂量以3 kGy为宜,醉泥螺保质期冷藏条件下由对照组的5个月延长至12个月,常温条件下由对照组的不到1个月延长到3个月。该结果能为电子束辐照保鲜醉泥螺提供依据。

英文摘要:

Abstract: Bullacta exarata is a kind of small economic shellfish distributed in intertidal zone of China's coastal. In the southeast coast of China, B. exarata is often made to drunk products and eaten raw, hence it may pose health hazards to consumers when contaminated with microorganisms. As limited alternative methods are available to sterilize the drunk B. exarata while preserving its raw characteristics, electron beam irradiation may be considered as an effective method for sterilization. This study sought to explore the bactericidal effect and changes of sensory quality and protein nutritional value of drunk B. exarata treated by electron beam irradiation and provide an experimental basis for application of irradiation sterilization technology in drunk B. exarata. Using drunk B. exarata as research material, the influence of electron beam irradiation on total plate count, sensory score, protein content, and amino acids composition were investigated, and then the shelf life of drunk B. exarata under refrigerated or room temperature were determined. The results were summarized as follows: 1) 1-9 kGy dose of electron beam irradiation did not cause the change of color or shape of B. exarata, but they were off-flavor after irradiation with a dose of 7 or 9 kGy. 2) The higher the irradiation dose, the better the antiseptic effect. The D10 value was 3.46 kGy when the total plate count of B. exarata was 1 200 cfu/g before irradiation. The sterilization effect with a 3 or 5 kGy dose was obvious, and total plate count of drunk B. exarata were less than 5 000 cfu/g both refrigerated and with room temperature storage within 360 days. 3) There was no significant effect of electron beam irradiation on protein content, and the limiting amino acid was not changed after irradiation. However, the total content of amino acids, total content of essential amino acids, and scores of essential amino acids (AAS) in irradiated drunk B. exarata ascended. 4) According to the research about the sterilization effect and sensory score of drunk B. exarata, the recommended dose of electron beam irradiation was 3 kGy. The shelf life of drunk B. exarata treated by 3kGy irradiation was extended from 5 months to 12 months, and from less than 1 month to 3 months, respectively during cold and room temperature storage. This work can provide technical references for preservation of drunk B. exarata by electron beam irradiation.

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