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(中)	
關鍵字 (英)	cholesterol oxidation products (COPs) marinated foods
摘要 (中)	<p>許多研究顯示膽固醇氧化產物 (cholesterol oxidation products, COPs) 會對人體健康造成傷害。含高量膽固醇的滷味食品, 例如滷肉和滷蛋, 容易經長時間加熱而生成大量的 COPs。本研究目的為以氣相層析-質譜儀分析滷肉、滷蛋與滷汁中的 COPs, 比較加熱時間、滷汁成分醬油和冰糖的添加量與抗氧化劑對滷味食品中 COPs 生成或抑制的影響。結果顯示, 滷蛋的 COPs 含量明顯高於滷肉, 長時間加熱均會導致滷蛋及滷肉中 COPs 含量顯著增加。滷肉之 COPs 含量於加熱期間的增加趨勢較滷蛋顯著, 於 24 小時加熱後增加 83 % 以上。滷汁中添加醬油及冰糖皆具有抑制膽固醇氧化的效果, 在滷蛋及滷肉中以冰糖的效果較佳, 滷汁則以添加 10 % 醬油的效果最好。另外, 抗氧化劑如維生素 C、維生素 E、BHA 及 Trolox 的添加均具有抑制 COPs 生成的能力, 其中以維生素 C 對滷蛋的膽固醇氧化抑制效果最佳, 滷肉及滷汁中則以添加 BHA 的效果較好。BHA 及 Trolox 於大部分條件下均會隨添加量的增加而具有更好的抑制效果, 但維生素 E 於低濃度的效果較佳, 維生素 C 對滷蛋中膽固醇氧化的抑制效果則是以添加高濃度者較佳, 但滷肉及滷汁中的抑制效果則是以添加低濃度者較佳。</p>
摘要 (英)	<p>Many studies have shown that cholesterol oxidation products (COPs) may be detrimental to human health. Marinated foods rich in cholesterol, such as egg and meat, may be susceptible to formation of high amount of COPs after prolonged heating. The objectives of this study were to analyze the COPs content in marinated meat, egg and juice by GC-MS, as well as compare the effect of heating time, level of soy sauce and crystal sugar in marinated juice, and antioxidants on the formation or inhibition of COPs. Results showed that the COPs were formed at a higher level in marinated egg than in marinated meat. During extensive heating, a pronounced increase of COPs was observed in both marinated egg and meat, however, a larger increase was found for the latter when compared to the former. After heating for 24 h, the amount of COPs in marinated meat increased more than 83 %. The incorporation of soy sauce and crystal sugar was effective in inhibiting COPs formation; the former was more efficient in marinated juice, while the latter was efficient in marinated egg and meat. In addition, the addition of antioxidants such as vitamin C, vitamin E, BHA and Trolox were also effective in inhibiting COPs formation. The best protective effect was shown for vitamin C in marinated egg, BHA in marinated meat and marinated juice. The inhibition effect increased both with increasing concentration of BHA and Trolox. Unlike BHA and Trolox, a better inhibition effect was found for vitamin E at a low concentration. However, a better inhibition effect was shown for vitamin C at a high concentration in marinated egg, and a reversed trend occurred in marinated meat and juice.</p>
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