

农产品辐照研究·食品科学

夏桑叶的体外抗氧化活性及其主要功能成分研究

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摘要:

利用体外清除自由基评价技术,测定并比较了夏桑叶与冬桑叶对3种氧中心自由基·OH、O₂⁻·和¹O₂的清除活性。结果显示,夏桑叶对·OH和O₂⁻·的清除活性与冬桑叶相近,而且清除¹O₂能力较冬桑叶的高61%,提示夏桑叶也是一种极具研发应用前景的天然医药保健资源。进一步分别用干叶热水提取法、鲜叶热水提取法和鲜叶温水提取法制得上、中、下部位夏桑叶的9种提取液,并分别测定其抗氧化活性,以及多酚、黄酮、多糖和蛋白质含量,分析相关性。结果表明,夏桑叶提取液对3种氧中心自由基的清除能力与其多酚和黄酮含量分别呈极显著正相关,多糖含量仅与¹O₂的清除能力呈显著正相关,而蛋白质则几乎不具自由基清除能力;夏桑叶中起抗氧化等作用的依然是多酚和黄酮这两类主要的生物活性成分;叶位与提取工艺对夏桑叶提取液的自由基清除能力和主要成分含量均有影响;夏桑叶生物活性物质的提取生产,以上部叶和中部叶为原料,且采用干叶热水提取法为佳,当提取车间离桑园较近时,也可以中部鲜叶为主要原料直接用鲜叶热水提取法,而上、下部鲜叶是否被选用则视实际情况而定。

关键词: 夏桑叶 抗氧化 叶位 提取工艺 成分 相关性

ANTIOXIDANT ACTIVITIES *in vitro* AND MAIN EFFICACY COMPONENTS IN SUMMER MULBERRY LEAVES

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Abstract:

Scavenging activities of ·OH, O₂⁻· and ¹O₂ of summer mulberry leaves and the winter mulberry leaves were determined by evaluation technology of scavenging free radicals *in vitro*. The results showed that the ·OH and O₂⁻ scavenging activities of summer mulberry leaves were similar to that of winter mulberry leaves, and the capacities to ¹O₂ scavenging activity of summer mulberry leaves were even 61% higher than that of the winter mulberry leaves. It indicated that the summer mulberry leaf is also a kind of ideal natural resources for medicine and health food. Furthermore, using 3 different extracting methods of dried leaves with hot water (Process 1), extracting from fresh leaves with hot water (Process 2) and extracting from fresh leaves with warm water (Process 3), 9 extracts were obtained from the upper, middle and lower parts of summer mulberry leaves, respectively. The antioxidant activities and main components contents (polyphenols, flavonoids, polysaccharides and proteins) of the extracts were measured, and the correlations between antioxidant activities and main components were analyzed. The results were as follows: (1) The correlation between the antioxidant capacities and polyphenols and flavonoids contents were highly significant, and the contents of polysaccharides were only significantly correlated with the capacity for scavenging ¹O₂, while the proteins were almost no scavenging radicals capacity. It indicated that the flavonoids and polyphenols in the summer mulberry leaves played the main role of antioxidation just as in winter mulberry leaves. (2) The effects of leaf position and extraction method on the antioxidant activities and contents of main components in summer mulberry leaves needed to be considered. (3) As for extracting the bioactive substances from the summer mulberry leaves, it's better to choose the middle and upper leaves and the Process 1. In addition, if the material was fresh, it's better to choose the middle leaves and the Process 2. And the upper or lower leaves might also be utilized in some cases.

Keywords: summer mulberry leaf antioxidation leaf position extraction processing components correlation

收稿日期 2011-02-18 修回日期 网络版发布日期

DOI:

基金项目:

扩展功能

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