INTRODUCTION

Indigenous cinnamon (Cinnamomum osmophloeum Kaneh.) (Cinnamomum), which belongs to the family Lauraceae, is an endemic tree that grows in Taiwan’s natural hardwood forests at elevations between 400 and 1500 m. Many previous studies demonstrate the bioactivity of these forestry industry products. For example, Chang et al. found that the leaf essential oil of C. osmophloeum has an excellent inhibitory effect against bacteria, termites, mites, mildew, and fungi (1–5). Cheng et al. (6) reported that essential oil from the leaves of C. osmophloeum exhibited the strongest mosquito larvicidal activity. It is well-known that in the past, the essential oils from the plant were commonly used in folk medicine, food flavorings, and fragrance; their multiple bioactive functions have been examined and developed in recent years.

Most of the chemical constituents of plant essential oils belong to terpenoid compounds, including monoterpens, sesquiterpenes, and their oxygenated derivatives. These low molecular weight (most below 300 g/mol) compounds easily diffuse across cell membranes to induce biological reactions. In recent years, there has been a tendency for applied studies of essential oils to focus on antimicrobial and the mosquito larvicidal activities as well as antiinflammatory bioactivity. Previous studies of antiinflammatory capacity found that the essential oils of some Lamiaceae can reduce carrageenan-induced hind paw inflammation in the rat (7–9). Hart et al. (10) demonstrated that tea tree oil would reduce the production of inflammatory cytokines, including TNF-α, IL-1β, IL-8, IL-10, and PGE2 by lipopolysaccharide (LPS)-activated human blood monocytes.

To further investigate the effects of the antiinflammatory activities of the essential oil from the leaves of C. osmophloeum, we examined the influence of this oil on the murine macrophage model (J774A.1 cell). The LPS or endotoxin is a well-known pathogen-associated molecular pattern, localized on Gram-negative bacteria cell walls (11). LPS activates macrophages by binding to toll-like receptor 4 and stimulates the production of inflammatory cytokines, including TNF-α, IL-1β, and IL-6 protein. While mediation of inflammation against pathogen infection by TNF-α, IL-1β, and IL-6 proteins could be beneficial to the host, overexpression of these cytokines may cause serious disease, including septic shock. Hence, suppression of TNF-α, IL-1β, and IL-6 protein production could aid in the treatment of septic shock. The IL-1β protein is secreted mainly from activated macrophages and is a central mediator of the cytokine network involved in countless biological functions and inflammation. Regulation of IL-1 expression in macrophages is a well-established model in previous studies (12–14).

In this study, leaf essential oil from C. osmophloeum was analyzed by gas chromatography–mass spectrometry (GC-MS)