

〈一般論文〉

アカエゾマツ芳香蒸留水のメラニン産生抑制作用と抗ピロリ菌活性

中島 景¹, 栃村まい¹, 寺田透弥¹, 前田尚之^{1,2}, 船津保浩¹,
大谷克城¹, 小泉次郎¹, 阿部 茂¹, 横田 博², 山口昭弘^{1,2,*}

Suppression of Melanogenesis and Antibacterial Effect on *Helicobacter pylori* of Fragrant Distillate from Sakhaline Spruce (*Picea glehnii*)

Kei NAKAJIMA¹, Mai TOCHIMURA¹, Tohya TERADA¹, Naoyuki MAEDA^{1,2}, Yasuhiro FUNATSU¹,
Katsuki OHTANI¹, Jiro KOIZUMI¹, Tsutomu ABE¹, Hiroshi YOKOTA², Akihiro YAMAGUCHI^{1,2,*}

(Accepted: April 3, 2024)

Abstract

Fragrant distillate, a byproduct of refining the essential oil from Sakhaline spruce, was evaluated for its inhibitory effect on melanin production in B16 mouse melanoma cells and its antibacterial effect on *Helicobacter pylori*. The fragrant distillate showed significant inhibition of melanin production ($p < 0.01$) in the presence or absence of α -melanocyte stimulating hormone (α -MSH), but the inhibition was more pronounced under stimulation with α -MSH. Inhibition of tyrosinase activity, the rate-limiting enzyme in melanogenesis, was not observed for both L-Tyr and 3,4-dihydroxy-L-phenylalanine (L-DOPA) substrates, suggesting the contribution of camphor, a major component of the fragrant distillate known to act in the α -MSH-stimulated cAMP cell signaling pathway. *H. pylori* infection is associated with various diseases including skin disorders as well as gastrointestinal diseases. The antibacterial effect on Gram-negative *H. pylori* was significant ($p < 0.01$) as Gram-negative *Escherichia coli*. No significant effect was observed against Gram-positive *Staphylococcus aureus*, but tendency of modest growth inhibition was observed. Since the antimicrobial effect of the essential oil of Sakhaline spruce was more distinct against *S. aureus* than against *E. coli*, it was inferred that the antimicrobial components in the aromatic distillate were more likely to be hydrophilic terpene alcohols than hydrophobic components common to essential oils. The new functions of fragrant distillate of Sakhaline spruce shown in this study have the potential to be used in the development of various cosmetic products beyond the limitations of essential oils.

Key words: thinned wood, by-product, herbal water, whitening effect, antibacterial effect.