Mandarin

Citrus Reticulata, mainly known as mandarin, is a shrub or small tree that grows up to 20 feet in height. The plants have aromatic flowers and glossy leaves, as well as globose fruit with sweet aromatic pulp and light yellow-orange to flame-orange peel, which is loose and easily removed (Nogata et al., 2003). Mandarin is one of the most popular Citrus fruits for fresh consumption.

Mandarin is rich in bioactive substances like flavonoids, citrulline-like bitters, and coumarins. These compounds have antioxidant, anti-inflammatory, anti aging, anticancer, and Alzheimer's disease prevention effects, and are widely used in food, medicine, and cosmetics. (Zhang et al., 2018)

A study suggests that mandarin essential oils can be valuable sources of natural antioxidants and antimicrobial agents. Mandarin essential oil displayed the highest antioxidant activity among the oils. This could be considered for use in food preservation to extend shelf life and prevent bacterial contamination. (Boudries et al., 2017)

In a comparative study, the antibacterial activity of mandarin extracts was tested against selected bacterial strains. The peel extract of mandarin was found to be more effective against Gram-positive bacteria than its juice extract, with the maximum zone of inhibition (20.33±1.527) observed against Bacillus species. Among the Gram-negative bacteria, the juice extract of mandarin was more effective than its peel extract, with the highest zone of inhibition (11.33±1.154) seen against Klebsiella pneumoniae ATCC 13883. The presence of specific flavanone glycosides in mandarin peels, such as narirutin, hesperidin, and naringin, may contribute to the effectiveness of the peel extract. These compounds may have antibacterial properties that make the peel extract more potent against certain bacteria. (Shakya et al., 2019)

A research by Nair S et al. (2018) also conducted in vitro assays using DLA cells, a type of cancer cell line. The study found that mandarin peel oil and water extract exhibited notable anti-cancer properties. Mandarin peel oil showed high cytotoxicity against DLA cells, leading to cell death, while the water extract displayed even more pronounced effects. The research demonstrated the potential health benefits of Mandarin peel oil and water extract, in preventing and combating cancer. The findings encourage the utilization of Citrus peels, which are often considered waste, for their potential as natural anticancer agents and support the reduction of food waste in the Citrus industry.

NOTES

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