

Nagami Kumkuat: A Source of Antiviral and Antimicrobial Bioactive Compounds

Authors : Howaida I. Abd-Alla, Nagwa M. M. Shalaby

Abstract : The fruit rind of *Fortunella margarita* (Nagami Kumkuat) was investigated for its chemical constituents. Thirteen metabolites were obtained and classified into, a sterol; β -sitosterol (1) and twelve phenolic compounds, three coumarins; xanthotoxin (2), isopimpinellin (3), umbelliferone (4), nine flavonoids of O-glycosides of flavone; apigenin-7-O- β -D-glucopyranoside (5), apigenin-7-O-rhamnoglucoside (rhoifolin) (6), C-glycosides; vitexin (7), vicenin II (8), and the methoxylated; 6-methoxyapigenin-7-methyl ether (9) and tangeretin (10) as well as flavanones class; naringenin (11), liquiritigenin (12), hesperdin (hesperetin-7-rhamnoglucoside) (13). All compounds were identified for the first time in *F. margarita* except compound (8). The major glycosides 5, 6, and 13 and total crude extract showed potential antiviral activity against live Newcastle disease virus vaccine strains (Komarov and LaSota) and live infectious bursitis viruses vaccine strain D78 replication in VERO cell cultures and on specific pathogen-free embryonated chicken eggs. Antiviral inhibitory concentration fifty (IC₅₀), cytotoxic concentration fifty (CC₅₀), and therapeutic index (TI) were calculated. In addition, the extract and compounds 7 and 13 showed marked antimicrobial activity against different strains of fungi, Gram-positive and negative bacteria, including some foodborne pathogens of animal origin, caused human disease. These results suggested that the extract of *F. margarita* may be considered potentially useful as a source of natural antiviral and antimicrobial agents. It can be used as an ingredient for functional food and/or pharmaceuticals.

Keywords : antimicrobial, antiviral, *Fortunella margarita*, Nagami Kumkuat, phenolic secondary metabolites

Conference Title : ICPP 2022 : International Conference on Pharmacognosy and Pharmaceutics

Conference Location : Lisbon, Portugal

Conference Dates : April 14-15, 2022