World Academy of Science, Engineering and Technology
International Journal of Mathematical and Computational Sciences
Vol:14, No:12, 2020

Physicochemical and Functional significance of Two Lychee (Litchi chinensis Sonn.) Cultivars Gola and Surakhi from Pakistan

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Abstract : Lychee is an emerging fruit crop in Pakistan. Two famous cultivars of lychee, Gola and Surakhi, were collected from Khanpur Orchard, Pakistan and their whole fruit (including peel, pulp and seed) was investigated for pomological features and therapeutic activities. Both cultivars differ in shape and size with Gola having large size (3.27cm length, 2.36cm width) and more flesh to seed ratio (8.65g). FTIR spectroscopy and phytochemical tests confirmed presence of different bioactive compounds like phenol, flavonoids, quinones, anthraquinones, tannins, glycosides, and alkaloids, in both lychee fruits. Atomic absorption spectroscopy indicated an increased amount of potassium, magnesium, sodium, iron, and calcium in Gola and Surakhi fruits. Small amount of trace metals, zinc and copper, were also detected in lychee fruit, while heavy metals lead, mercury, and nickel were absent. These two lychee cultivars were also screened for antitumor activity by Potato disc assay with maximum antitumor activity shown by aqueous extract of Surakhi seed (77%) followed by aqueous extract of Gola pulp (74%). Antimicrobial activity of fruit parts was checked by agar well diffusion method against six bacterial strains Enterococcus faecium, Enterococcus faecalis, Staphylococcus aureus, Bacillus subtilis, Bacillus sp. MB083, and Bacillus sp. MB141. Highest antimicrobial activity was shown by methanolic extract of Gola pulp (27mm ± 0.70) and seed (19.5mm ± 0.712) against Enterococcus faecalis. DPPH scavenging assay revealed highest antioxidant activity by aqueous extract of Gola peel (98.10%) followed by n-hexane extract of Surakhi peel (97.73%). Results obtained by reducing power assay also corroborated with the results of DPPH scavenging activity.

Keywords : antimicrobial evaluation, antitumor assay, gola, phytoconstituents, reactive oxygen species, Surakhi
Conference Title : ICSRD 2020 : International Conference on Scientific Research and Development
Conference Location : Chicago, United States
Conference Dates : December 12-13, 2020