

ABSTRACT

Terfezia claveryi is a promising natural source for bioactive peptides responsible for antioxidant and antimicrobial properties. People with fatigue need to enhance their energy production, reduce oxidative stress-associated fatigue and microbial infection. In this study antioxidant and antimicrobial activities of bioactive peptides are evaluated by using protein extracted from desert truffles (*Terfezia claveryi Chatin*). The macro-Kjeldahl technique is used to determine the crude protein content (N6.25) of the samples. Amino acids and phenolic compounds were determined by amino acids analyzer and HPLC, respectively. The truffle was dried, ground and thawed to extract the protein and then applied for fermentation by *lactobacillus casei* with different times (24, 48) hours at 37°C followed by ultrafiltration by 3 kda cut off tubes. The antioxidant activity is determined using DPPH• radical scavenging activity and FRAP assay. The antimicrobial activity is evaluated in agar diffusion assay, while MIC and MBC are determined using the microdilution broth assay. The results show that *Terfezia claveryi* rich in carbohydrates, proteins and low in lipid. Protein percentage is 17.64 %. *Terfezia claveryi* contain twelve amino acids and nine phenolic compounds. Phenolic compounds such as Rutin, Gallic acid, Sinapic acids and Chlorogenic acid were identified as the major phenolic compound with concentration 6479.035, 3737.48, 1263.303, 1151.521 µg/gm respectively. Peptide extract from fermented desert truffle protein for 48 hours showed high antioxidant activity by DPPH and FRAP methods with radical inhibition and standard equivalent approximately 76% and 0.52 mmol/g respectively. The higher antimicrobial activity percentage was found to be at 95.87% against *Pseudomonas aeruginosa* while lowest activity was 89.2% against *Candida albicans*, the growth inhibition percentage towards *Staphylococcus aureus*, *Escherichia coli* and *Listeria monocytogenes* were 93.65%, 94.49% and 95.57%, respectively. In conclusion, *Terfezia. claveryi* is a good source of antioxidant and antimicrobial agents since it contains metabolites (bioactive peptides). Thus, it is useful for fatigued and normal individuals who desire a more active and healthier lifestyle without oxidative stress and microbial infections.