

ABSTRACT

Moss are seen as plants that have no use value. Moss has a role in maintaining the stability of the environmental ecosystem. Bioactive compounds in moss play a role in absorbing sunlight for photosynthesis and act as antioxidant materials. The problem in utilizing moss is the narrow UV spectrum coverage and low antioxidant activity. Modification of moss extract has been carried out by administering urea and microwave irradiation. The absorbance spectrum coverage was in the UV wavelength range. Modified moss extract with an optimum SPF value of 7.47 with microwave irradiation for 10 minutes and a modified mass of 0.06g. This value is higher than the SPF of moss extract, which is 0.77. The use of mass from the modified moss extract obtained a higher SPF value and optimum SPF value of 14.72 with a mass of 0.2 g. These results are comparable to commercial cosmetic products. Besides being able to absorb UV rays, the antioxidant activity of the modified moss extract increased significantly. The moss extract only has an IC50 value of 176,586 ppm which is classified as weak. Meanwhile, the antioxidant activity of the modified moss extract was very strong with an IC50 value of 8,921 ppm. This finding supports the use of modified moss extract with dual functions, namely as a photoprotective and strong antioxidant. Thus, these results open up opportunities for the utilization and cultivation of moss to increase its economic value.

Keywords: moss, photoprotective, ultraviolet, antioxidant