

Melatonin Content of Legume Seeds and Its Correlation with Antioxidant Activity

Jintana SANGSOPHA¹, Anuchita MOONGNGARM^{1*}, NutjareePATHEEPAWANITJOHNS², Jeffrey JOHNS²

¹Department of Food Technology and Nutrition, Faculty of

Technology, Mahasarakham University, MahaSarakham, 44150, Thailand

²Faculty of Pharmaceutical Sciences, KhonKaen University, KhonKaen, 40002, Thailand

(*Corresponding author: anuchitac@yahoo.co.th)

Abstract

Legume seeds are generally high nutritional value and possess a variety of bioactive compounds, among which melatonin is one of the most attraction compounds in recent times through its sleeping aid and antioxidant capacity properties. In this study, extracts of four legume seeds including soy bean, red bean, black bean and peanut were investigated for melatonin content and antioxidant activity. The correlation between melatonin content and antioxidant activity was also evaluated. The melatonin content was analyzed by HPLC-FD. The antioxidant activity was determined using four different methods including total phenolic content (TPC) (Folin-Ciocalteu method), 1,1-diphenyl-2-picrylhydrazyl (DPPH) radical scavenging, ferric reducing antioxidant power assay (FRAP), and ABTS radical cation decolorization assay. The significant differences were found in the melatonin and total phenolic content amongst the legume seeds. Red bean and soybean seed represented the highest melatonin content (496.19 ± 13.17 ng/g dry weight) and (446.06 ± 22.77 ng/g dry weight). Peanut possessed the highest phenolic content (15.56 ± 1.38 mg GAE/g dry weight). The correlation efficient between the antioxidant activity and melatonin content of all legume seeds had no statistically differences. However, the result showed a negative correlation between melatonin content and antioxidant activity using DPPH assay and positive correlation was found with the ABTS and FRAP assay. The results of this study demonstrated that legume seeds are a good source of melatonin and antioxidants indicating that legume seeds are potential food sources for developing new food products for sleeping aid which related to the melatonin content in legume seeds.

Keywords: Melatonin, legume seeds, antioxidant activity, sleeping aid, legume