

Anti-inflammatory and Free Radical Scavenging Activities of Aqueous Extracts of Coriander Seeds Roasted at Different Temperatures

H.N.M.N. Herath^{1*}, D.C.K. Illeperuma¹, K.D.P. Gunathilake² and C.V.L. Jayasinghe²

¹ Department of Food Science and Technology, Faculty of Agriculture, University of Peradeniya, Peradeniya, Sri Lanka

² Department of Food Science and Technology, Faculty of Livestock, Fisheries and Nutrition, Wayamba University of Sri Lanka, Makandura, Gonawila, Sri Lanka

*Corresponding Author E-mail: nayanamalih@gmail.com, TP: +94778454484

In traditional medicine, roasted coriander (*Coriandrum sativum vulgare* Alef) seeds are boiled with water and commonly used as a beverage to fight viral infections and flu. As roasting enhances therapeutic properties, effect of roasting of coriander seeds at 120, 140 and 160 °C for 15 min on colour of seeds and free radical scavenging and anti-inflammatory activities of aqueous extracts were studied and physical properties of the seeds were determined. Moisture contents of unroasted seeds and those roasted at 120, 140 and 160 °C were 6.5 ± 0.6 , 2.3 ± 0.1 , 1.5 ± 0.1 and $1.2 \pm 0.1\%$ respectively. Geometric mean diameter of 4.31 ± 0.19 mm, surface area of 58.61 ± 5.05 mm², sphericity index of 91.2 ± 4.7 and aspect ratio of 89.86 ± 7.41 were evident for seeds having a length of 4.74 ± 0.34 mm, width of 4.25 ± 0.26 mm and thickness 4.0 ± 0.3 mm of 100 seeds, measured using a vernier caliper. Thousand kernel weight and bulk density were 19.77 ± 0.38 g and 236 ± 2 kg m⁻³ respectively. Colour of unroasted and roasted coriander seeds was analyzed using a Chromameter and expressed as L*, a* and b* values. The lowest L* value of 30.73 ± 0.58 and the highest a* and b* values of 17.9 ± 0.2 and 29.75 ± 0.42 respectively, were evident in seeds roasted at 160 °C. Decoctions were prepared by heating the powdered samples at 60 ± 5 °C in clay pots for 150 min while maintaining a solid to water ratio of 6:100 (g mL⁻¹). Decoctions of coriander seeds roasted at 140 °C had the highest DPPH radical scavenging activity ($87.48 \pm 2.35\%$ inhibition) among those from unroasted and roasted at 120 and 160 °C. Inhibition percentage of haemolysis ranged from 50.16 ± 3.30 to $58.10 \pm 0.41\%$. Decoctions prepared from the seeds roasted at 140 °C for 15 min showed the highest inhibition percentage of haemolysis. Therefore, roasting of coriander seeds at 140 °C for 15 min can be recommended for preparing decoctions and or any other industrial applications.

Keywords: Coriander; Inflammation; Free radical scavenging activity; Roasting