

A Study on the Pharmaceutical Properties of *Triticum aestivum* Linn. (Wheatgrass)

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Wheatgrass refers to the young grass of the common wheat plant or bread wheat is widely cultivated almost all over the world. In the form of fresh juice, it has high concentrations of chlorophyll, active enzymes, vitamins and other nutrients. Consequently, the present research was focused on growing conditions of wheatgrass and its characteristics such as Microscopical characters, antimicrobial activities, liquefaction power, phytochemical investigation, total chlorophyll content, total phenol content, nutritional values, cytotoxicities, antioxidant activities, and function of chlorophyll. The growing of wheatgrass at three different planting conditions (only water, sand & water and soil & water) was studied. Although the growth rate of the wheatgrass planting with only water, and planting with soil & water was higher than that of planting with sand & water, the antimicrobial activities and enzyme power were the best in planting with only water. The phytochemical constituents of wheatgrass (air dried powder of wheatgrass planting with only water) are alkaloids, flavonoids, phenolics, polyphenols, carbohydrates, α -amino acids, reducing sugars, glycosides and saponins. The highest chlorophyll amount was observed in the leaves planting with only water. Moreover, the compositions of chlorophyll (chlorophyll a, chlorophyll b, pheophytin, lutein) in wheatgrass were identified by Thin Layer Chromatography. The total phenol content of juice was higher than that of crude extracts. Wheatgrass contains moisture (19.76%), ash (2.23%), fat (3.93%), fiber (41.52%), protein (6.13%), carbohydrate (26.43%) and energy value (165.31 kcal/100g) respectively. The cytotoxicity of the juice was more toxic to brine shrimp than the crude extracts. The LD₅₀ value of juice was 55.01 μ L/mL and the extracts were not cytotoxic to brine shrimp up to maximum dose of 1000 μ g/mL. The largest radical scavenging activity to scavenge DPPH radical was observed in juice, the lowest activity was found in ethanol extract. And then, the increasing power of hemoglobin in blood was spectrophotometrically monitored by Cyanmethemoglobin Method with Drabkin's solution testing mice. On the whole treatment, the quantities of hemoglobin in tested mice were increased during five days feedings. The wheatgrass juices gave more potent hemoglobin content to male mice while ethanol extract to female mice. Therefore, the wheatgrass samples can be used to increase the red blood cell rebuilding ability.

Key words: Wheatgrass, phytochemical constituents, cytotoxicity, chlorophyll, hemoglobin