

Integrating Qur'anic Solutions in the Utilization of Coffee Leaves as a Natural Tea for Preventing Diabetes and Tea Leaves as Organic Fertilizer

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Abstract. Diabetes mellitus (DM) is a global degenerative disease with an increasing number of sufferers, including Indonesia, which is now ranked sixth in deaths due to diabetes. Coffee leaves (*Coffea* sp.) contain bioactive compounds such as chlorogenic acid, flavonoids, polyphenols, and mangiferin that have the potential to lower blood glucose levels, improve pancreatic beta cells, and support cardiovascular health. This research proposes an innovation in processing coffee leaves into functional herbal tea as a preventive measure against DM, while also utilizing the residue as organic fertilizer. The tea production process includes leaf selection, washing, drying at temperatures of 40–65°C, grinding, and packaging in tea bags. Analysis results show that low temperature drying (40°C) of mature leaves produces the highest phenol content (19.5 mgGAE/gr) and optimal antioxidant activity ($IC_{50} \pm 47$ mg/mL). Effectiveness tests show a reduction in blood glucose levels of up to 72.48% and regeneration of pancreatic beta cells by 73.04%, nearing the performance of the drug metformin. The residue from coffee leaves still contains macro- and micronutrients (N 0.4%; P 0.2%; K 0.7%; Si 7.9%; C 40%), thus having the potential to improve soil fertility. Its processing with the help of EM4 accelerates the process into quality organic fertilizer. This innovation is in line with the principles of halal and *tayyiban* and the concept of zero waste, integrating Qur'anic values, scientific knowledge, and appropriate technology. The implementation is expected to involve coffee farmers, MSMEs, academics, and health institutions to create integrated solutions for public health and environmental sustainability.

Keywords: Diabetes, Leaves, Coffee, Herbal Tea, Fertilizer