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OPTIMIZATION OF PECTINASE ENZYME ASSISTED JAFFNA GROWN ISRAEL BLUE (VITIS VINIFERA L.) GRAPE JUICE CLARIFICATION PROCESS

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Abstract- The study was conducted to evaluate the optimized basis of pectinase enzyme treatment to Israel blue (*Vitis vinifera* L.) grape juice through a general full factorial design and juice quality was assessed based on the ratio of Total Soluble Solids to Titratable Acidity (TSS/TA), Total Monomeric Anthocyanin content (TAC), and antioxidant capacity. Pectinase enzyme treatment was applied to the grape pulp to clarify grape juice and an optimization study was conducted to determine the best level of treatment combination. Enzyme concentration (0.05 %, 0.15 %, 0.5 %, 1.5 %, 2 %); incubation temperature (40 °C, 50 °C) and incubation time (1 hour, 2 hours) were used as variables. The increase of enzyme concentration, incubation time and decrease of incubation temperature resulted in high levels of TSS/TA, TAC and antioxidant capacity. The highest level of treatment combination was determined at ($p < 0.05$) level as 2 % pectinase enzyme, 40 °C incubation temperature, 2 hours' incubation time with TSS/TA 26.46, TAC 181.02 ± 4.03 mg/L and antioxidant capacity based on DPPH radical scavenging assay as IC₅₀ value of 7.02 ± 0.34 mg of Gallic acid equivalents per mL and ABTS radical scavenging assay as IC₅₀ value of 0.33 ± 0.01 mg of Trolox equivalents per mL.

Key words- Israel blue; Grape juice clarification; Pectinase enzyme; Optimization study
