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<b>Abstract</b>	<p>The electrocoagulation (EC) method, when combined with sonication and aeration, is an example of an advanced oxidation process (AOP) that may be used to treat a variety of wastewaters. The methods of sono (US), airlift (AL), EC, US/AL, AL/EC, US/EC, and AL/US/EC were used to investigate the decrease of color and chemical oxygen demand (COD) in landfill leachate wastewater (LLW). According to experimental findings, under the following optimal conditions of treatment time (TT) = 3 h pH = 7, current density (J) = 1 A dm<sup>-2</sup>, COD = 3200 mg L<sup>-1</sup>, concentration of electrolyte (ConElec) = 4 g L<sup>-1</sup>, electrode combination (EleCom) = Fe/Fe, aerated flow rate (AFR) = 25 L hr<sup>-1</sup>, sonication power (USp) = 100 Watts and inter-electrode spacing (IES) = 1 cm, the AL/US/EC method reduced the 100% of color and COD from LLW with consumption of power (CP) approximately 6.50 kWhrm<sup>-3</sup>. The values discovered were significantly higher than those obtained from the US, AL, US/AL, EC, US/EC, and AL/EC procedures. To determine the optimal operating conditions, the influence of several distinct control variables, TT = 0.5–3.5 h, J = 0.2–1.2 A dm<sup>-2</sup>, COD = 1600–6000 mg L<sup>-1</sup>, ConElec = 0.5–5 g L<sup>-1</sup>, AFR = 0–35 L hr<sup>-1</sup>, USp = 20–100 W, and IES = 1–4 cm on color and COD reduction was investigated. Enhancements in COD reduction effectiveness were seen with extended TT, elevated J, increased USp and AFR, reduced COD concentrations, and diminished IES when employing Fe/Fe electrode combinations. The synergy index between the AL and US/EC processes was analyzed and recorded. This study indicated that the AL/US/EC approach is highly effective for treating LLW.</p>