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This study aimed to develop and optimize a novel bakery filling using honey, apple puree, and carboxymethyl cellulose (CMC) and compare its properties with commercial fruit fillings. A Box-Behnken design was employed to optimize the preparation process, considering three key independent variables: apple puree (10–30% w/w of honey weight), CMC (1–1.5% w/w of honey weight), and vacuum drying time (5–10 h). The effects of these variables were systematically evaluated in terms of baking stability index, syneresis, total phenolic content (TPC), firmness, and water activity. The optimal formulation was identified as 25.14% apple puree, 1.21% CMC, and a drying time of 7 h and 23 min. Incorporating apple puree significantly enhanced TPC, total flavonoid content (TFC), and antioxidant capacity, while CMC played a critical role in improving baking stability and viscoelastic properties. The optimized honey-fruit fillings exhibited similar thermal properties to commercial fruit fillings but demonstrated superior antioxidant activity, including higher TPC, TFC, and radical scavenging activity. Although commercial fruit fillings displayed slightly better viscoelastic properties, they had lower structural stability compared to the honey-fruit mixture. The optimized honey-fruit filling provides a promising alternative to commercial options, offering superior nutritional value, enhanced rheological stability, and comparable thermal characteristics. This innovation highlights the potential for developing bakery fillings with improved health benefits and functional properties.