A trinuclear cobalt(II) complex, \([\text{Co}_3(\text{PhCH}=\text{CHCO}_2)_6(\text{bpy})_2] \) (1) (bpy = 2,2-bipyridine), was synthesized and structurally characterized by single crystal X-ray diffraction. Complex 1 crystallizes in the triclinic space group \(P\bar{1}\) with cell parameters: \(a = 11.347(6), b = 11.471(6), c = 14.247(8) \, \text{Å},\) \(\alpha = 69.503(9), \beta = 74.211(9), \gamma = 76.812(11) ^\circ, \) \(V = 1653.2(15) \, \text{Å}^3, Z = 1, \) and \(R1(F) = 0.026, wR2(F^2) = 0.138.\) Complex 1 has a linear arrangement of three Co(II) centers bridged by six cinna- mate carboxylate groups, four of which function in a bidentate syn-syn fashion linking the peripheral Co2 atoms, and two as both bidentate bridging and bidentate chelating units. The Co1 atom is located on a crystallographic inversion center and exhibits a slightly distorted octahedral coordination geometry, while the terminal Co atoms (Co2 and Co2\#1) have a significantly distorted octahedral environment. Hydrogen bonding interactions and π-π stacking interactions stabilize the structure.

**Key words:** Crystal Structure, Cobalt(II), Linear Trinuclear Cluster, Thermal Stability