Supporting Information

S1.Release of Cannabinol in the Octane/Water System

Due to the hydrophobic nature of cannabinol, direct investigation of its release kinetics into an aqueous environment is difficult. This compound exhibits very low solubility in water; therefore, under physiological conditions, it preferentially distributes into lipophilic environments. After administration of the carrier into the body, CBN may be released into lipid-rich structures such as cell membranes or other hydrophobic components. This phenomenon is particularly important because cannabinol can interact with the lipid structure of biological membranes, influencing their physicochemical properties and organization. To approximate conditions that favor the distribution of hydrophobic molecules, a model two-phase n-octane/water system was used. In this system, octane serves as the organic phase simulating a lipophilic environment into which CBN molecules released from the carrier material can diffuse. In the present study, the release of cannabinol from hydroxyapatite into the octane phase over time was investigated. The obtained results indicate that at the initial stage of the release process, only a slight increase in CBN concentration in the organic phase is observed. After 1 hour of incubation, the amount of released cannabinoid was approximately 5% of the total amount deposited in the material (see Fig. S1). The highest rate of increase in the degree of release was observed after approximately 2.5 hours of incubation. This phenomenon may be associated with the diffusion of cannabinol molecules from the interior of the material pores to its surface and subsequently into the organic phase. As time progresses, the availability of CBN in the surface layers of nHAp_CBN increases, which facilitates its migration into the octane phase. Ultimately, approximately 47% of the total amount of CBN is released.

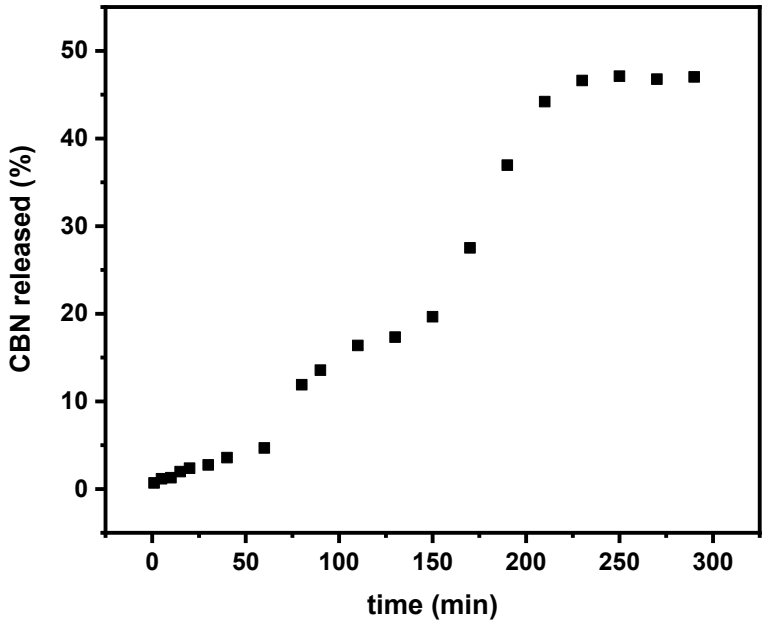


Figure S1. Time-dependent release profile of CBN from hydroxyapatite in the octane/water system

The obtained results suggest that the release of cannabinol from hydroxyapatite is a gradual process. Such a release profile may be advantageous from the perspective of potential biomedical applications, as it enables the sustained delivery of the compound to a lipophilic environment.