

**SYNTHESIS AND CHARACTERIZATION OF ASCORBIC
ACID-LAYERED DOUBLE HYDROXIDE VIA CO-
PRECIPITATION METHOD AND ITS CONTROL RELEASE
PROPERTIES WITH VARIOUS TYPES OF AQUEOUS MEDIA**

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ABSTRACT

SYNTHESIS AND CHARACTERIZATION OF ASCORBIC ACID-LAYERED DOUBLE HYDROXIDE VIA CO-PRECIPITATION AND ITS CONTROL RELEASE PROPERTIES WITH VARIOUS TYPES OF AQUEOUS MEDIA

Ascorbic acid (ASA) or also known as vitamin C was successfully intercalated between Zn-Al layered double hydroxide, Zn-Al-LDH inorganic host is synthesized by co-precipitation method at pH 7.0 ± 0.5 and Zn and Al molar ratio of 4. Both PXRD and FTIR results confirm that the ASA was successfully intercalated into the Zn-Al-LDH interlayer. The X-Ray diffraction pattern showed that the expansion of basal spacing from 8.9 \AA in the Zn-Al-LDH changes to 11.7 \AA is because of intercalation of ASA into the Zn-Al-LDH (intercalation of ASA into Zn-Al-LDH). The most important feature in FTIR spectrum for Zn-Al-ASA is the disappearance of nitrate absorption band (at 1351 cm^{-1}) and the presence of a new band at 1613 cm^{-1} , due to the presence of C=C alkene, which confirms the intercalation of ASA in the ionic form in the interlayer of the LDH. CHNS analysis, the loading percentage of ASA into LDH is determined to be 27 % at the concentration of ASA 0.9 M. CHNS analysis indicates that only 0.3 % of nitrogen is present. The percentage of saturated release of the ASA is in the order of phosphate > carbonate > chloride with percentage of saturated release 92 %, 64 % and 42 % respectively. This study shows that the Zn-Al-layered double hydroxide can be used as a host for controlled release formulation.