Controlled release of pesticides intercalated in L– HD and cereal plant growth

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The most well-known anionic clays are the hydrotalcite-like layered double hydroxides (LDHs). Different minerals have been utilized to generate a bewildering array of materials, all of which function as anionic clays. The anionic clays exhibit anion sorption, anion diffusion and exchange properties together with surface basicity making them materials of importance for many modern applications. These anionic clays are useful in agriculture due their
physical and chemical properties, which decrease the pollution effects, in order to obtain organic products. The present study has been carried out to develop the potential of LDH as plant nutrients, pesticides and growth regulators of plants. It is known that serious environmental problems arisefrom the use of pesticides. Application of LDH in pesticide formulations is currently attracting interest. To increase pesticide efficiency and to reduce their leaching into the air and water, the intercalation into layers of LDH is agood solution, because the LDH effectively protect unstable pesticidesagainst volatilization and photo-degradation, which lead to increasing frequency and dose of herbicide treatment. In this work, a study concerning the effects of some nanocomposites (anionic clay containing the pesticid chlorothalonil) on plant growth is presented. Seeds of corn (Zea mays) and wheat (Triticum sativum) were put into Petri dishes on double filter paper together with suspensions from these nanocomposites. Then the germinated seeds from control variant and treated ones are planted in boxex and they developed in Biophysics Department Laboratory. The dynamic of germination and the growth has been monitorized during the first phenophase of growth. The content of photosynthetic pigmens and the aminoacid content from plant leaves has been determined spectrophotometrically. Our results showed that the nanocomposites could modify the plant growth by controlled release of the pesticide.