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Despite the wide range of materials for bone grafting none of them meets all the requirements of the modern reconstructive surgery, which makes an active search for the new and improvement of existing materials. According to the actual regenerative approach the emphasis is placed upon the replacement of the ceramic material with the native biological material of the growing bone. The ceramic material plays the role of an active source of many chemical elements, which are essential to the new bone building. Magnesium ion is an important factor for bone metabolism, for the bone matrix formation and its mineralization. It can also affect the activity of osteoblasts and osteoclasts, i.e. the rate of bone growth. Therefore it is important to create materials, which contain phases that are capable of highlighting magnesium ions in the process of dissolving. Such ceramic materials can be made from powder mixtures of different calcium and magnesium phosphates such as dimagnesium phosphate or magnesium pyrophosphate. To obtain the resorbable ceramic material based on magnesium pyrophosphate with the ratio of Mg/P = 1, a method for preparing powder precursor of this phase has to be developed. Newberyte (MgHPO₄•3H₂O) and struvite ((NH₄)MgPO₄•6H₂O) provide an example of such powder precursors with the ratio of Mg/P = 1.

Nanosize hydrous magnesium phosphates powders were obtained from the water solutions of hydrogen phosphates (disodium (Na₂HPO₄•12H₂O), dipotassium (K₂HPO₄•3H₂O), diammonium ((NH₄)₂HPO₄)) and magnesium chloride (MgCl₂•6H₂O). Different sequence of solution pouring was used. After synthesis from disodium hydrogen phosphate and magnesium chloride the powders comprised of newberyite. After synthesis from dipotassium hydrogen phosphate and magnesium chloride the powders comprised a mixture of newberyte (MgHPO₄•3H₂O) and trimagnesium diphosphate (Mg₃(PO₄)₂•2H₂O). After synthesis from diammonium hydrogen phosphate and magnesium chloride the powders comprised of struvite ((NH₄)MgPO₄•6H₂O). Following the heat-treatment phase, composition of the samples depend on the firing temperature and the composition of the initial powders. After firing Mg₃P₂O₇ and Mg₃(PO₄)₂ were present in the samples. All the synthesized powders can be used as precursor powders for the ceramic material comprising magnesium pyrophosphate phase. The present work develops the idea of getting powders for resorbable ceramics, which contain phases that are capable of to highlight magnesium ions in the process of dissolving from synthetic newberyte and struvite powders.