In highly developed countries, civilization diseases caused by stress, improper diet or lack of physical activity are the main cause of hospitalization and death of patients. Among them, disturbances in blood flow of blood vessels in the brain can cause ischemic or hemorrhagic strokes. In addition to traditional pharmacological treatment, devices placed in cerebral vessels are also used, such as coils, stents, and flow diverters. Those currently used are mainly made of NiTi alloys, Co alloys or 316L steel. However, the constant presence of metallic material in the human body may lead to a number of complications, including: inflammatory reactions or thrombosis. Therefore, in recent years there has been a dynamic development of a modern group of biomaterials, which includes bioabsorbable metals. These metals have the ability to dissolve in the physiological environment without producing products that are toxic to the human body. In the case of cardiovascular stents, work on their bioabsorbable counterparts is already advanced and such products have been introduced on the market. In the case of cerebral vessels, such devices would introduce a significant revolution in treatment. Nevertheless, developing material for such implants is a significant challenge due to the anatomical characteristics of cerebral arteries, they must meet more strict requirements. Potential candidates for bioabsorbable materials include zinc, magnesium and iron alloys. Zinc as a material has great potential due to its appropriate rate of dissolution in the human body. However, the mechanical properties of pure zinc are insufficient for these applications. Recent scientific research, including our own research, has shown that both the addition of appropriate alloying elements and the use of an appropriate deformation method allow for a significant improvement in these properties. It is still a challenge to design a material that is suitable for a given application. The main goal of the project is to identify the mechanisms that will ensure that the proposed material behaves mechanically stable and dissolves uniformly in the human body.