

1. Naslov, akronim, logo projekta, budžet
 2. Naslov projekta: COMPOSITE CLAYS AS ADVANCED MATERIALS IN ANIMAL NUTRITION AND BIOMEDICINE
 3. Akronim projekta: AniNutBiomedCLAYs
 4. Budžet: 36199243,50 RSD
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2. Sastav konzorcijuma odnosno projektnog tima ispred Fakulteta:
 3. Bojan Čalija, vanredni profesor, Katedra za farmaceutsku tehnologiju i kozmetologiju
 4. Danina Krajišnik, vanredni profesor, Katedra za farmaceutsku tehnologiju i kozmetologiju
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 6. Apstrakt projekta:
 7. The aim and main novelty of the research proposal is development, preparation, characterization and *in vitro* and *in vivo* testing of new classes of the natural and modified clay minerals suitable to act as adsorbents of mycotoxins (aflatoxin B1 – AFB1, zearalenone – ZEN and ochratoxin A – OCHRA) or carriers of APIs (antibiotics and antiseptics). Clays are traditionally used as additives in animal feed to reduce harmful effects of mycotoxins. Additionally, clay minerals are promising materials for biomedical applications (e.g. carriers of active pharmaceutical ingredients - APIs). The natural bentonites – BENTs and halloysite will be used as starting materials. Modifications of clays with surfactants or biopolymers (chitosan and polysaccharides from medicinal mushrooms) will be developed and investigated during this project. Characterization of the raw clays and obtained composites will be done using chemical, XRD and DTA/TG/DSC analyses, SEM/EDS, FTIR spectroscopy, determination of zeta potential, etc. The adsorption of mycotoxins or APIs will be studied under different conditions (initial concentrations, pH, etc.). For these experiments HPLC and/or UV/VIS spectroscopy will be used. The adsorption capacities will be calculated from experimentally determined isotherms. It is expected that BENTs will be efficient to adsorb AFB1, while composites will have a high affinity for adsorption of ZEN, OCHRA and APIs. Characterization of API(s)/composite complexes by several above mentioned methods will be also performed. Biopharmaceutical characterization of these complexes will be evaluated. Antimicrobial and antioxidative properties, as well as the preclinical safety and toxicity testing of the natural clays and composites will be determined. It is supposed that results will lead to the definition of specific characteristics of the natural clays and composites, which will be essential for their potential practical application in animal nutrition and biomedicine.