

QUESTIONNAIRE

(*) – mandatory fields

	Details about organisation
* Organisation name	Iovel Kutateladze Institute of Pharmacochimistry
Organisation acronym	IKIP
* Organisation Activity Type (RES - Research, HE - University, SME - Small and Medium Enterprise, IND - Industry, OTH - Other)	RES
* Keywords of main research areas	biologically active natural compounds, drug delivery, drug development
* Head of organisation (first name, family name)	Zurab Kemoklidze
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* Description of organisation and its research achievements for the last five years (~ 5000 signs)
<p>Iovel Kutateladze Institute of Pharmacochimistry (IKIP) is a leading institution in Pharmaceutical Sciences of Georgia and at present has a staff 89 employees, including 50 Ph.Doctors: pharmacists, biologists, technologists, chemists, engineers, botanists, physicians.</p> <p>IKIP was founded in 1932 as a research unit for pharmaceutical science and pharmaceutical industry in Georgia with a main function to assist government to develop pharmaceutical industry, new technologies, as well as various pharmaceutical formulations, drug quality regulation and development/validation of standardization methodologies.</p> <p>The Institute carries out investigations by following directions:</p> <ul style="list-style-type: none"> • pharmacobotanical investigations of medicinal plants; • study of bioactive compounds: alkaloids, cardiac glycosides, steroid and triterpene glycosides, lipids, flavonoids, coumarins, tannids, anthraquinons, lectins, polysaccharides, proteolytic enzymes; • chemical composition, isolation, structure elucidation; • synthesis of biologically active compounds, chemical modification of natural products; • complex pharmacological and toxicological investigations of obtained substances and preparations (including preclinical study); • development of bioactive compounds and various pharmaceutical formulations with natural and/or synthetic ingredients;

- development of analytical and standardization methodologies.

The subdivisions for drug R&D actually, starting from discovery and screening of biologically active substances, and manufacturing of finished products at the end, are operating in the IKIP. Respectively, besides the special laboratories at the Institute's disposal a pilot manufacturing plant is operating.

The Institute has many years experience in the studies of the medicinal plants, synthesis of biologically active 5 α -group steroidal compounds on the basis of tigogenin and heterocyclic compounds, development of technologies of medicinal substances and pharmaceutical formulations.

Polyphenols, flavonoids, steroid and triterpene saponins, polysaccharides, vitamins, enzymes have been isolated, their chemical structures have been elucidated, physico-chemical and pharmacological properties have been studied with the purpose of their application in medicine for treatment various diseases.

Studies were conducted with the purpose to extent possibilities of application of preparation Tikha-Askane, from Georgian bentonite, in pharmacy, medicine, veterinary and cosmetics, to obtain the enzymatic preparations and investigate the enzymes of plant and microbial origin with the aim of their application in medicine, to modify complex of papaya proteases in order to improve their stability and pharmacological properties. On the base of Tikha-Askane there have been prepared emulsion- and suspension-type ointments and dry ointment concentrates for treatment and prevention of various diseases, various receipts of the ointment bases have been worked out. The technologies of obtaining berberine, colhamine, colchicine, etc. have been developed. Proteolytic complex – rimoprotelin was obtained and studied. Complex of papaya proteases was obtained from the latex of *Carica papaya* introduced in Georgia. The technology of production of papain enzymes was developed and proteolytic enzymatic preparation Caripazym was manufactured.

Scientific collaboration:

- Mediterranean University of Marseille, Marseille, France
- University of Athens, Athens, Greece
- Research Center "Demokritos" , Athens, Greece
- University of Liege, Liege, Belgium
- Institute of Biomolecular Chemistry ICB-CNR, Naples, Italy
- North-Eastern University, Boston, USA
- University of Quebec in Chacutimi, Canada
- National Pharmaceutical University, Kharkov, Ukraine

Contact Information	
* Contact person (first name, family name)	Inga Dadeshidze
* Department / Laboratory	Administrative
* Position	Vice-Director
* Qualification and research experience	Ph.D., development and biopharmaceutical studies of pharmaceutical formulations, pharmacological in vitro/in vivo study of anti-diabetic, anti-inflammatory, antioxidant activity of natural products
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International co-operation / Participation in EU RTD programmes or other bilateral / multilateral actions
INTAS, TACIS, TEMPUS, COST, EUREKA, other RTD programmes (please specify programme/s, project title/s and year/s)
TACIS project “Marketing and Management in Science: Management of Research and Development Activities and Business Development” 1998
INTAS # 97-491 “Structure elucidation, cytotoxic and antiparasitic activities of saponins from <i>Hedera colchica</i> and <i>H. postuchowii</i> and their possible application in human and veterinary medicine. Georgia-France-Belgium” 1999 / 2001
ISTC Project # G-308 “New Products for Topical Treatment of Atopic Dermatitis with the Purpose of Preventive Results against Ecopathology” 2000 / 2002
INTAS #01-2043 “Research on antitumoral natural compounds from Uzbek and Georgian plants. Georgia-France-Belgium-Uzbekistan” 2002 / 2004
ISTC Project # G-865 “New indol-containing condensed tetracyclic systems with potential antitubercular activity: synthesis and screening” 2003 / 2005
NATO Reintegration Grant, RIG 9800773 “Synthesis of some new biologically active compounds on the basis of steroidal sapogenin-tigogenin”, 2003 / 2006
GRDF Project GEC 2-3326-TB04 “Indol-containing [b]annelated Benzofurans – potential antitubercular medicines of new generation: synthesis and screening” 2005 / 2007
Project ECONET “Investigation of biodiversity of endemic plants of Georgia and Azerbaijan. Georgia-France-Azerbaijan” 2005 / 2006
STCU Project # 4309 “Modification of Complex of Papaya Proteases by synthetic biodegradable polymeric carriers as a potential injection” 2007 / 2009

	* Please, use “X” to indicate the scientific area/s of your potential project
CHEMISTRY	X
SOCIAL AND HUMAN SCIENCES	
ECONOMIC SCIENCES	
ENGINEERING SCIENCE	
ENVIRONMENT	
AGRICULTURE AND FOOD	
HEALTH	X
MATHEMATICS	
INFORMATION SCIENCE	

PHYSICS	
NANOTECHNOLOGIES	
ENERGY	
TRANSPORT	
SPACE	

*** Summary of potential research project envisaged hosting of European researcher for the period of between 1 and 2 years**

Project Title: Modification of Complex of Papaya Proteases by Biodegradable Polymeric Carriers for the Application in Ophthalmology and Vertebral Medicine

For treatment of vertebral, ophthalmologic and other diseases the complex of Papaya proteases (CPP) that have unique anti-inflammatory and necrolytic properties were effectively used. The method of injection treatment, however, is given up currently because of relatively high toxicity and allergenicity of CPP. At this same time it is known that the decrease of undesirable properties of proteins, including enzymes, can be achieved by chemical modifications of their macromolecules. One of the most promising approaches is the covalent binding (immobilization) of proteins with water-soluble polymeric carrier.

The goal of the present project is to combine our efforts with foreign collaborators in the development of modified CPP (MCP) preparations for subsequent pharmacological study with the final goal to develop effective and safe injections/films for treatment of vertebral, ophthalmic, neuralgic diseases, etc.

For the proposed project, the following specific tasks will be done:

1. The synthesis and characterization of polymeric carriers;
2. The chemical modification (conjugation) of CPP;
3. The elaboration of an optimal laboratory technology;
4. Pharmacological preclinical studies of MCP preparations.

Project Title: The development of fundamental tri- and tetra-cyclic systems and their derivatives on the basis of natural phenolic compound – coumarin. Synthesis and pharmacological study

The discovery and synthesis of chemical structures with high ability to react and possibility to be transformed into the compounds of same or another classes is a pivotal task of organic chemistry. For the practical point of view the rapid research in combinatorial chemistry, formation of combinatorial library and high throughput screening is one of the fundamentals of the discovery and development of new medicines, and most of innovative developments of pharmaceutical giants are based on the results of these investigations.

The objectives of proposed project are to obtain rational and principal heterocyclic systems on the basis of natural phenolic compound- coumarin, containing indole and benzimidazole fragments and to screen the obtained derivatives pharmacologically in order to reveal biologically active compounds.

The project is aiming at construction tri- and tetracyclic systems with high ability to react and potency to be transformed easily into the compounds with pharmacophore and chemically active groups or in analogues of natural compounds, that will allow to synthesize wide-range derivatives and form combinatorial library in order to reveal biologically active compounds with diverse activity for development of new drugs. According to preliminary study the synthesized compounds probably possess anti-

tubercular, antiviral, anti-platelet and analgesic activities and exactly these activities will be tested in the frame of proposed project.

	Please, confirm your agreement on data publication and dissemination
I agree with the publication of the data on the web-site http://www.inco-ecca.net , and dissemination among Mobility National Contact Points of the EU MS and AC (YES / NO)	YES
Date	December 8, 2008