Program	**Program NUCLEU PN 09 13 01 09**
Project title (ENG):	**The identification and quantification of some pharmaceutical residues in wastewater treatment plant influents and effluents and assessing the risk**
Project title (RO):	**Identificarea și cuantificarea unor reziduuri farmaceutice în influentii și efluenții stațiilor de tratare a apelor uzate și evaluarea riscului determinat de prezența acestora.**
Duration	2009-2014
Team Leader	Jana Petre
Summary (short description) RO	Au fost dezvoltate metode de determinare simultană a concentraţiilor în apa uzată si de suprafață a unor reziduuri farmaceutice din diferite clase structurale și terapeutice: analgezice/antiinflamatoare (*acetaminofen, ketoprofen, naproxen, indometacin, diclofenac, ibuprofen),* antibiotice *(eritromicina, azitromicina, sulfametoxazol, trimetoprim, norfloxacin, ofloxacin, ciprofloxacin, ampicilina, amoxicilina, penicilina V, penicilina G, oxacilina, cefalexin, claritromicină, roxitromicina*), diuretice (*furosemid, hidroclortiazida*), antiseptice (*triclosan, triclocarban*), *carbamazepina, cafeina, gemfibrozil*. Metodele se bazează pe tehnicile de extracție în fază solidă, separare prin cromatografie de lichide de inaltă performanță, ionizare electrospray și detecție, confirmare și cuantificare prin spectrometrie de masă în tandem (SPE-HPLC-ESI-MS/MS). Metodele dezvoltate au fost utilizate la controlul poluării cu aceste reziduuri farmaceutice a influentului şi efluentului unor staţii orăşeneşti de epurare a apei reziduale, precum și la evaluarea gradului de contaminare a apelor de suprafață receptoare.
Summary (short description) ENG	Methods for simultaneous determination of pharmaceutical residues from different structural and therapeutic classes in wastewater and surface water have been developed. These are: analgesics / anti-inflammatories (*acetaminophen, ketoprofen, naproxen, indomethacin, diclofenac, ibuprofen),* antibiotics (*erythromycin, azithromycin, sulfamethoxazole trimethoprim, norfloxacin, ofloxacin, ciprofloxacin, ampicillin, amoxicillin, penicillin V, penicillin G, oxacillin, cephalexin, clarithromycin, roxithromycin),* diuretics *(furosemide, hydrochlorothiazide),* antiseptic *(triclosan, triclocarban), carbamazepine, caffeine, gemfibrozil.* The methods are based on solid-phase extraction techniques, separation by high-performance liquid chromatography, electrospray ionization and detection, confirmation and quantification by tandem mass spectrometry (SPE-HPLC-ESI-MS/MS). The developed methods were used to control the pollution with these pharmaceutical residues of influent and effluent of urban stations for wastewater treatment, as well as to evaluate the receiving surface water contamination.
Dissemination of results	
Full-paper ISI	Petre, J., Galaon, T., Iancu, V.I., Cruceru, L., Niculescu, M., Simultaneous liquid chromatography-tandem mass spectrometry determmination of some pharmaceuticals and antimicrobial disinfectant agents in surface water and in urban wastewater, *Journal of Environmental Protection and Ecology,* 2016, 17, no 1, 119-126.

Full-paper ISI	Petre, J., Galaon, T., Iancu, V.I., Vasile G.G., Stanescu, E., Pascu, L.F., Simion, M., Cruceru, L., Simultaneous Analysis of Selected Dissolved Pharmaceuticals in the Water of the Danube River and its Three Major Tributaries in Romania, *Revista de Chimie*, 2016, 67(8), 1436-1440.
	Petre, J., Iancu, V.I., Vasile, G.G., Albu, F., Niculescu, M., Niculae, A.C., Cruceru, L., Nicolau, M., Analysis, occurence and removal of nine pharmaceuticals in wastewaters from municipal wastewater treatment plant, *SGEM 2013 Conference Proceedings, ISBN 978-619-7105-04-9, vol I, 71-78 pp, 2013, 13th SGEM GeoConference on Ecology, Economics, Education and Legislation, 16-22 June, 2013, Albena, Bulgaria*.
	Galaon, T., Petre, J., Iancu, V.I., Stanescu, E., *LC-MS/MS determination of eight pharmaceuticals and two disinfectants in the Danube River and three major tributaries from Romania;* 15th International Multidisciplinary Scientific GeoConference SGEM 2015, www.sgem.org, SGEM2015 Conference Proceedings, ISBN 978-619-7105-40-7 / ISSN 1314-2704, June 18-24, 2015, Book5 Vol. 2, 301-308 pp.
Conferences (platform, poster, abstract / full-paper	Petre, J., Iancu, V. I., Stăniloae, D., Nastac, E., Cruceru, L., (2009), Development of an analytical method for the determination of some analgesic/anti-inflammatory drugs in wastewater treatment plant influent and effluent samples, I*nternational Symposium "The Environment and Industry" 28-30 October, Bucharest.*
	Petre, J., Iancu, V. I., Cruceru, L., (2010), Development of an analytical method for the determination of carbamazepine, coffeine and some analgezic/anti-inflammatory drugs in wastewater treatment plant influent and effluent samples. *The XXXI-st Romanian Chemistry Conference, 6-8 October, Râmnicu Vâlcea, Romania*
	Petre, J., Iancu, V., Radu, G.-L., (2011), Monitoring of some pharmaceutical compounds in waste water treatment plant influent and effluent samples by liquid chromatography, *International Symposium "The Environment and Industry" 16-18 November , Bucharest.*
	Petre, J., Iancu, V.I., Niculescu, M., Vasile, G.G., (2013), Simultaneous determination of β-lactams antibiotics in wastewater samples by solid phase extraction follwed by high-performance liquid chromatography and tandem mass spectrometry. *International Symposium "The Environment And The Industry", 29-30 October, Bucharest.*
	Petre, J., Galaon, T., Iancu, V.I., Stanescu, E., Occurence of 18 pharmaceuticals in Danube River and three major tributaries from Romania, *8th International Conference on Environment Engineering and Management ICEEM08*, 9-12 September 2015, Iasi, Romania, pp 57-58.