

CURRICULUM VITAE

Prof. Silvia Rossi



Education and training

Silvia Rossi obtained the degree in Pharmaceutical Chemistry and Technology at the University of Pavia in 1988 (110/110 cum laude), the post-graduate degree in Industrial Pharmacy in 1991 and the PhD in Pharmaceutical Chemistry and Technology in 1995 at the same University.

Current position

Associate professor since 2006; member of the teaching board and deputy coordinator of the PhD Course in Chemical, Pharmaceutical Sciences and Industrial Innovation; member of the teaching board of the post-graduate Master courses Preformulation, Pharmaceutical Development and Control of Medicines and Pharmaceutical Technology and Regulation; member of the Research Committee established at the Department of Drug Sciences. In 2013 she obtained the scientific habilitation as Full professor for sector 03/D2.

Professional experience

Research activities

The research interests concern pharmaceutical development of conventional and controlled release formulations. Early research works focused on the characterization of mucoadhesive materials and the development of mucoadhesive drug delivery systems. The research activity led to the set-up of a new rheological approach (based on stationary viscoelastic measurements) that allows a thorough characterization of polymer-mucin interactions involved in the mucoadhesion phenomenon. The gained experience on mucoadhesive polymers was the starting-point for the design and development of mucoadhesive formulations for buccal, vaginal and ocular administration. Penetration enhancement properties of mucoadhesive polymers (i.e chitosan and its derivatives) have been subsequently studied. Such polymers have been employed in the development of gels, film, matrices and nanoparticles for mucosal administration. Other research interest involved the study of polymer-drug ionic interaction in the oral controlled drug delivery.

Current research concerns the development of: i) semisolid (in situ gel forming) and solid (sponge-like dressings, films, particulate systems) formulations for the treatment of mucosal, corneal and skin lesions/infections; ii) nanofiber systems for the treatment of chronic ulcers and spinal cord injuries. The research activity focuses on the employment of polysaccharide polymers in the development of therapeutic platforms able to promote tissue regeneration/reparation. Such platforms are intended for antimicrobial, antioxidant, anti-inflammatory agents and for drugs able to improve

tissue regeneration eventually in association with hemoderivatives (such as platelet lysate, rich in growth factors).

Teaching

From 1998 she is teaching at the Faculty of Pharmacy (now Department of Drug Sciences) of Pavia University in the field of Biopharmaceutics and Pharmaceutical Technology; in the present year (2017-2018) she teaches Pharmaceutical Technology and Legislation 2 (Master's degree in Pharmacy); Innovative drug delivery systems (Master's degrees in Pharmacy, Pharmaceutical Chemistry and Technology, Biotechnology); moreover, she teaches in postgraduate Master and PhD courses in the field of Pharmaceutical Technology.

Research projects financed by pharmaceutical companies (last 5 years)

Scientific responsibility for the following research projects:

"Preformulation of pharmaceutical active principles" commissioned by Dipharma Francis S.r.l., Baranzate (MI) (2015 - 2017);

"Formulation development of bioadhesive and/or in situ gelifying vehicles for oral, rectal/colonic or for submucosal or subcutaneous implant" commissioned by Cosmo Technologies, Dublin, Ireland (2015 - 2018);

"In vitro mucoadhesion test: Benzidamine 0.15% w/w and cetylpridine hydrochloride mucoadhesive mouthwash" commissioned by ACRAF Angelini (Roma) (2016);

"Study of a emulsion gel for topical administration" commissioned by Vamfarma SRL (Comazzo) (2017- 2018);

"Formulation development of a o/w emulsion based on omega 3" commissioned by IBSA Farmaceutici SRL (Lodi) (2018).

Awards

Actimex award for the best poster "Assessment of chitosan derivative transmucosal penetration enhancers" in the area "Research & Development", 42° Simposio AFI, Perugia, 29-31 Maggio 2002;

Best poster award "Chitosan and trimethylchitosan as buccal penetration enhancers: a morphological investigation" in the area "Research & Development", 45° Simposio AFI, Rimini, 15-17 June 2005;

Most cited paper 2004 Award Elsevier, granted at AAPS Annual Meeting and Exposition November 11-15, 2007, San Diego, CA, USA, for the paper entitled "Assessment of chitosan derivatives as buccal and vaginal penetration enhancers", G. Sandri, S. Rossi, F. Ferrari, M.C. Bonferoni, C. Muzzarelli, C. Caramella, European Journal of Pharmaceutical Sciences 21 (2-3) (2004), 351-359;

Best poster award "Thermosensitive eye drops containing platelet lysate for the treatment of corneal ulcers. In vitro wound healing testing" 4th AITUN Annual Meeting, Innovation in Pharmaceutics: "a glimpse" in Biotech world, Napoli, 26-27 February, 2010;

Best paper award Journal of Drug Delivery Science and Technology, granted at 8th World Meeting on Pharmaceutics, Biopharmaceutics and Pharmaceutical Technology, Istanbul, Turkey, 19-22 March, 2012 for the paper entitled "Comparison of functional and biological properties of chitosan and hyaluronic acid, to be used for the treatment of mucositis in cancer", A. Puccio, F. Ferrari, S. Rossi, M. C. Bonferoni, G. Sandri, C. Dacarro, P. Grisoli, C. Caramella, J. Drug Deliv. Sci. Technol 21 (2011), 241-247;

Best poster award "Hyaluronic acid capsules in alginate dressings for the combined delivery of platelet lysate and vancomycin in skin ulcers", 7th AI+UN Annual Meeting "New frontiers in living cell encapsulation", Perugia, 8-9 March 2013;

Best poster award, 2nd classified "In situ gel forming vehicle for the delivery of *Lactobacillus gasseri* into vaginal cavity", 11th AI+UN Annual Meeting "Clinical experience and technological innovation in pain therapy: from traditional APIs to cannabinoids", Padua, 11-12 May, 2017.

Scientific Publications

Total number of refereed publications: **154** contributions published on scientific journals (128 articles, 26 abstracts), **16** patents, **17** book chapters; more than **290** communications in scientific meetings.

H-index: 35

Total citations: 3000 (Scopus, 12th July 2018).

A List of the recent more relevant 10 peer-reviewed publications is reported below.

1. Rossi, S., Mori, M., Vigani, B., Bonferoni, M.C., Sandri, G., Riva, F., Caramella, C., Ferrari, F. (2018). A novel dressing for the combined delivery of platelet lysate and vancomycin hydrochloride to chronic skin ulcers: Hyaluronic acid particles in alginate matrices. *European Journal of Pharmaceutical Sciences* 118, 87-95.
2. Marciello, M., Rossi, S., Caramella, C., Remunan Lopez, C. (2017). Freeze-dried cylinders carrying chitosan nanoparticles for vaginal peptide delivery. *Carbohydrate Polymers* 170, 43-51.
3. Tenci, M., Rossi, S., Aguzzi, C., Cerezo, P., Sandri, G., Bonferoni, M. C., Grisoli, P., Viseras, C., Caramella, C. M., Ferrari, F. (2017). Carvacrol/clay hybrids loaded into in situ gelling films. *International Journal of Pharmaceutics* 531, 676- 688.
4. Tenci, M., Rossi, S., Bonferoni, M.C., Sandri, G., Mentori, I., Boselli, C., Icaro Cornaglia, A., Daglia, M., Marchese, A., Caramella, C., Ferrari, F. (2017). Application of DoE approach in the development of mini-capsules, based on biopolymers and manuka honey polar fraction, as powder formulation for the treatment of skin ulcers. *International Journal of Pharmaceutics* 516 (1-2), 266-277.
5. Tenci, M., Rossi, S., Bonferoni, M.C., Sandri, G., Boselli, C., Di Lorenzo, A., Daglia, M., Icaro Cornaglia, A., Gioglio, L., Perotti, C., Caramella, C., Ferrari, F. (2016). Particulate systems based on pectin/chitosan association for the delivery of manuka honey components and platelet lysate in chronic skin ulcers. *International Journal of Pharmaceutics* 509 (1-2), 59-70.

6. Mori, M., Rossi, S., Ferrari, F., Bonferoni, M.C., Sandri, G., Chlapanidas, T., Torre, M.L., Caramella, C.M. (2016). Sponge-like dressings based on the association of chitosan and sericin for the treatment of chronic skin ulcers. I. Design of Experiments-assisted development. *Journal of Pharmaceutical Sciences* 105, 1180-1187.
7. Mori, M., Rossi, S., Ferrari, F., Bonferoni, M.C., Sandri, G., Riva, F., Tenci, M., Del Fante, C., Nicoletti, G., Caramella, C.M. (2016). Sponge-like dressings based on the association of chitosan and sericin for the treatment of chronic skin ulcers. II. Loading of the hemoderivative platelet lysate. *Journal of Pharmaceutical Sciences* 105, 1188-1195.
8. Mori, M., Rossi, S., Bonferoni M.C., Ferrari, F., Sandri, G., Riva, F., Del Fante, C., Perotti, C., Caramella, C.M. (2016). Calcium alginate particles for the combined delivery of platelet lysate and vancomycin hydrochloride in chronic skin ulcers. *International Journal of Pharmaceutics* 461, 505- 513.
9. Rossi, S., Ferrari, F., Bonferoni, M.C., Sandri, G., Faccendini, A., Puccio, A., Caramella, C. (2014). Comparison of poloxamer- and chitosan-based thermally sensitive gels for the treatment of vaginal mucositis. *Drug Development and Industrial Pharmacy* 40, 352-360.
10. Rossi, S., Faccendini, A., Bonferoni, M.C., Ferrari, F., Sandri, G., Del Fante, C., Perotti, C., Caramella, C.M. (2013). "Sponge-like" dressings based on biopolymers for the delivery of platelet lysate to skin chronic wounds. *International Journal of Pharmaceutics* 440, 207- 215.