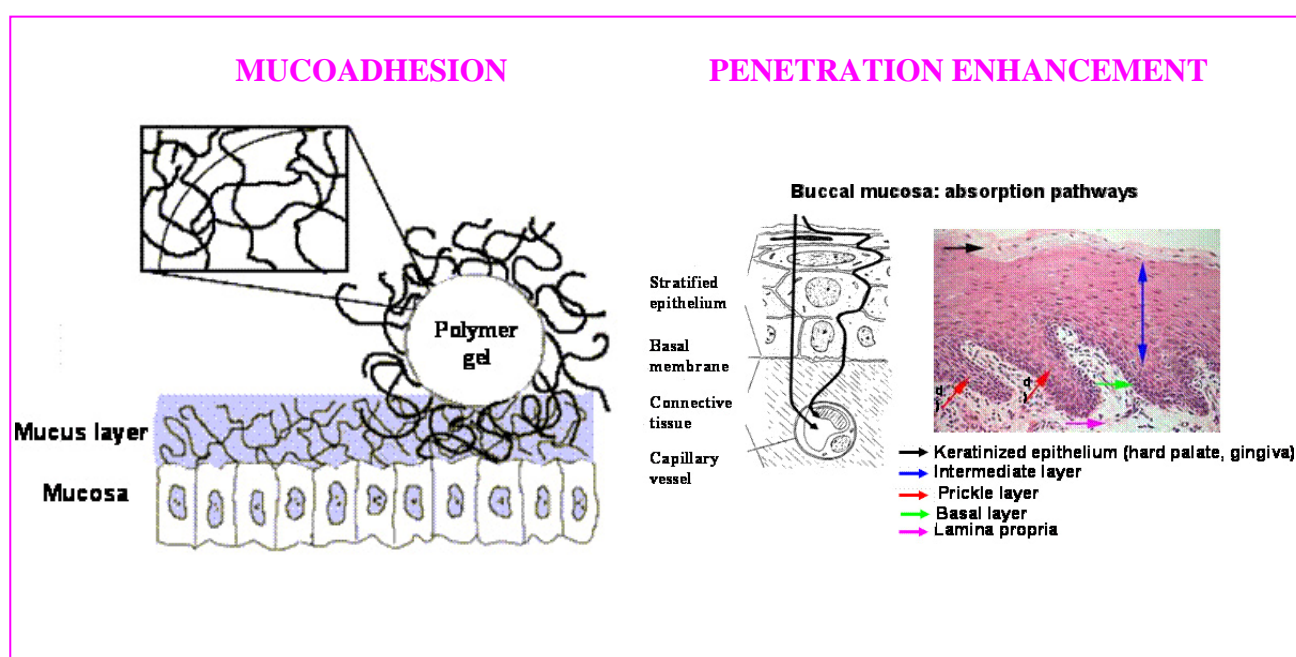


## Mucoadhesive therapeutic systems for the delivery of drugs through mucosal routes

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The project involves the design of therapeutic systems intended for the drug delivery through non oral mucosae such as buccal, vaginal and nasal routes. To this aim mucoadhesive polymers will be chosen to increase the residence of the formulations at the administration/absorption site.

By employing absorption enhancers it is made possible to improve the bioavailability of hydrophilic drug molecules usually poorly absorbed especially if characterized by high molecular weight such as polypeptides.



### 1. Description of the product

The group is involved in the formulation of mucoadhesive systems for buccal, vaginal and ophthalmic application. Multifunctional polymers with also absorption enhancer and enzyme inhibition properties are studied to vehicle hydrophilic drugs and peptides. The group develops semi-solid, solid and micro and nano-particles mucoadhesive systems. Recently developed systems are: vaginal gels for the rehabilitation of acid physiologic conditions and systems for the administration of peptidic and antiinfective drugs. Buccal systems based on thermo-gelling polymers for the administration of antiinfective drugs. Ophthalmic mucoadhesive solutions for anticongestant drugs and micro-nano particulates for antimicrobial and immunosuppressant drugs.

### 2. Innovative aspect of the product

The formulative technologies proposed are suitable to the vehiculation of drugs which still present bio-availability problems, such as peptide drugs. Innovative aspect of this study is the employment of multifunctional polymers with mucoadhesive, absorption enhancement and proteolytic enzyme inhibition properties. By this way we'll optimize the residence of the formulations at the administration site, the pattern of drug release, the absorption promotion, and the drug bioavailability.

### 3. Main advantages of the offer

Our preparation technology allows to preserve pharmacological activity of peptidic drugs and to improve their stability. This is possible thanks to the mild conditions used when preparing the formulation (low temperature, low mechanical stress). Also solid systems (films, matrices and microparticulates) can be prepared based on the same principles, further reducing possible loss of pharmacological activity of the peptidic drugs.

### 4. Technology key words

Mucoadhesion; Mucosal delivery; Absorption enhancers; Proteolytic enzymes inhibition; Buccal; Vaginal; Ophthalmic

### 5. Current Stage of Development

Development phase – laboratory tested; Available for demonstration – field tested.

### 6. Intellectual Property Rights

Vaginal gel made of chitosano and lactic acid has european patent:

C.M. Caramella, M.C. Bonferoni, P. Giunchedi – “Compositions with controlled release of lactic acid at vaginal level” – WO 03/000224 03-01-2003

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Microparticle systems based on polymer drug interaction for ocular delivery of ciprofloxacin. I. In vitro characterization *J. Drug Delivery Science and Technol.* 17 (1), 57-62 (2007)

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