Omyapharm FCC

A new generation of multifunctional mineral excipient

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A new generation of multifunctional mineral excipient

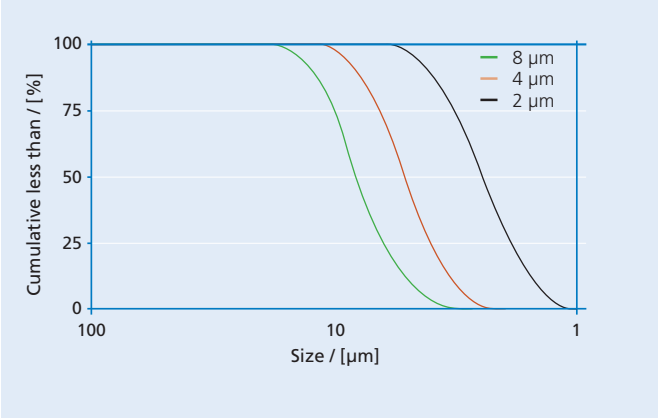
- Innovative functionalized excipient for pharmaceuticals
- High efficiency carrier for multiple substances
- Controlled-release properties

Discover the benefits of Omyapharm FCC in your application.

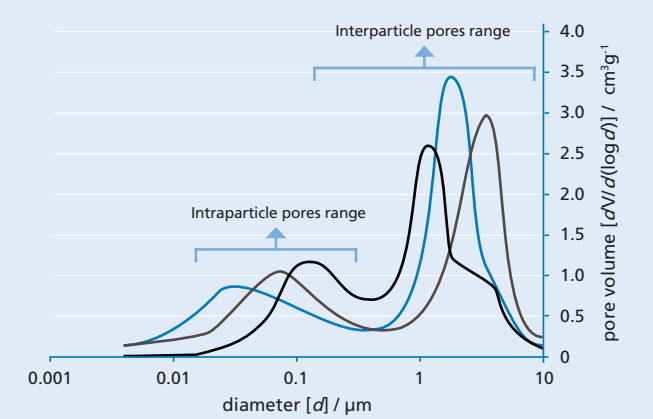
Advantages

- High loading capability
- Controlled release vector
- Direct compressibility
- Stabilization of API's
- Dissolution enhancement

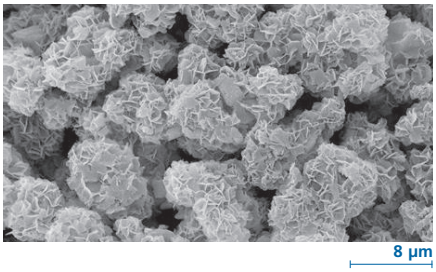
Particle size distribution (laser diffraction)

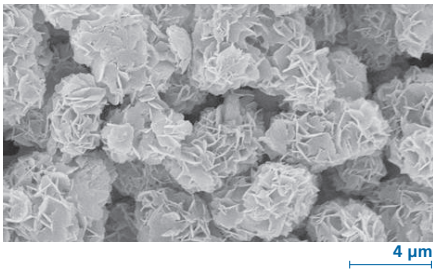


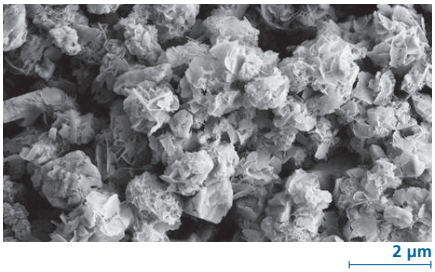
Pore Size (mercury porosimeter)



- Size range 2.5 to 10 µm
- Highly porous nature
- Surface area range 30-70m²g⁻¹







Omyapharm FCC Compaction Behavior

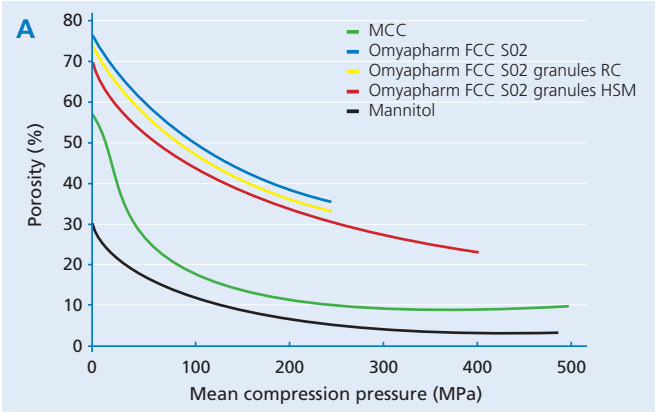
Stirnimann et al. (2014) International Journal of Pharmaceutics 466: 266–275

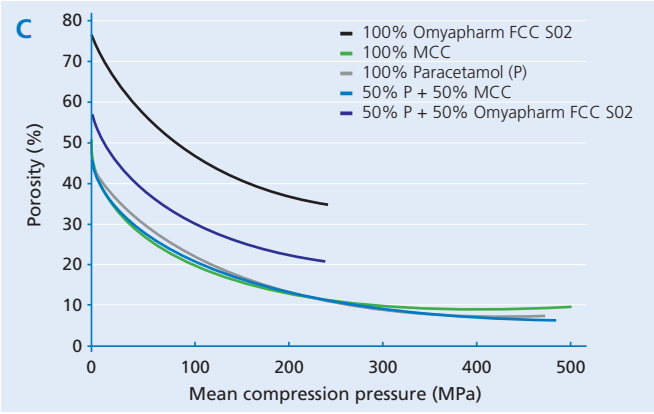
Omyapharm FCC was granulated both by high shear mixer (HSM) and roller compaction (RC), with and without binder respectively. Granulation of Omyapharm FCC had no significant influence on tensile strength and porosity (figure A).

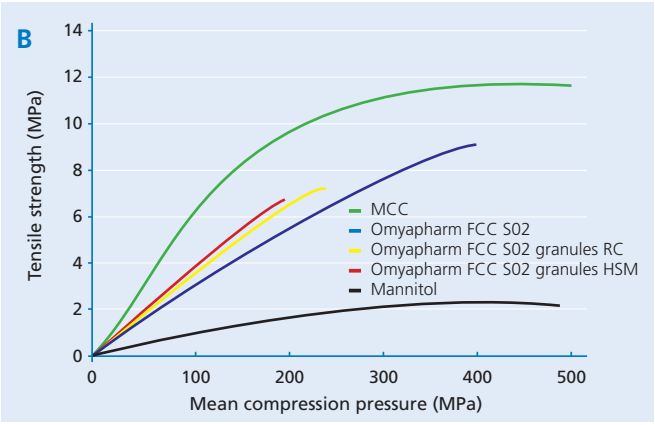
Also formulations with Omyapharm FCC showed higher porosity than formulations with MCC at different compression pressures (figure A).

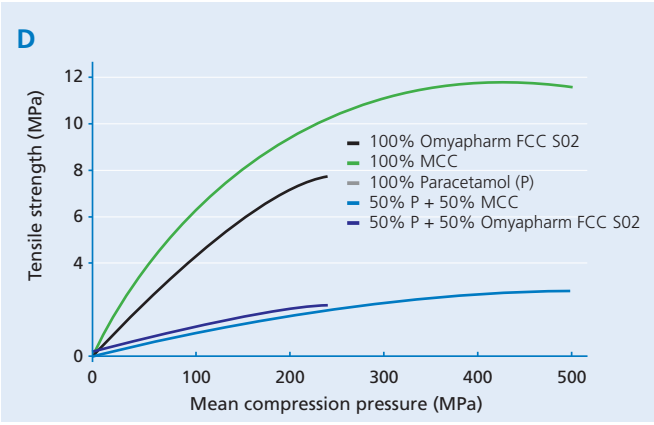
Omyapharm FCC required comparable or lower compression pressures than other excipients such as MCC or mannitol, in order to produce robust tablets (figure B).

High porosity and tensile strength were preserved after blending Omyapharm FCC with an API like paracetamol (figures C and D).









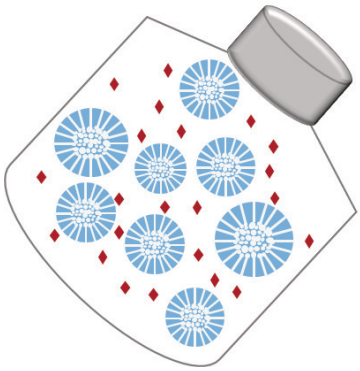
Omyapharm FCC and Drug Loading

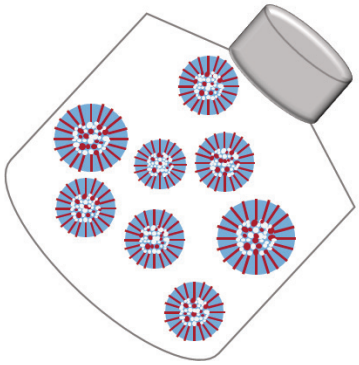
Preisig et al. (2014) European Journal of Pharmaceutics and Biopharmaceutics 87:548- 558

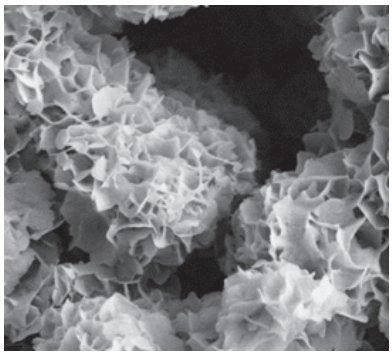
Omyapharm FCC + Drug

Omyapharm FCC Loaded with Drug

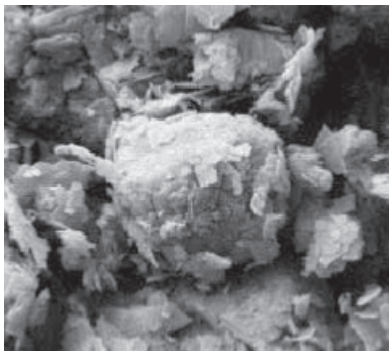
Drug Impregnation







2 µm



2 µm

Omyapharm FCC microparticles and four separate drugs with different permeability and solubility properties respectively were selected as model substances to investigate drug loading by solvent evaporation.

Nifedipine and Metronidazole benzoate loaded Omyapharm FCC: complete drug dissolution occurred in half the time.

Ibuprofen loaded Omyapharm FCC: little changes in dissolution rate were observed but proved to be an interesting alternative to micronization of this poorly soluble drug.

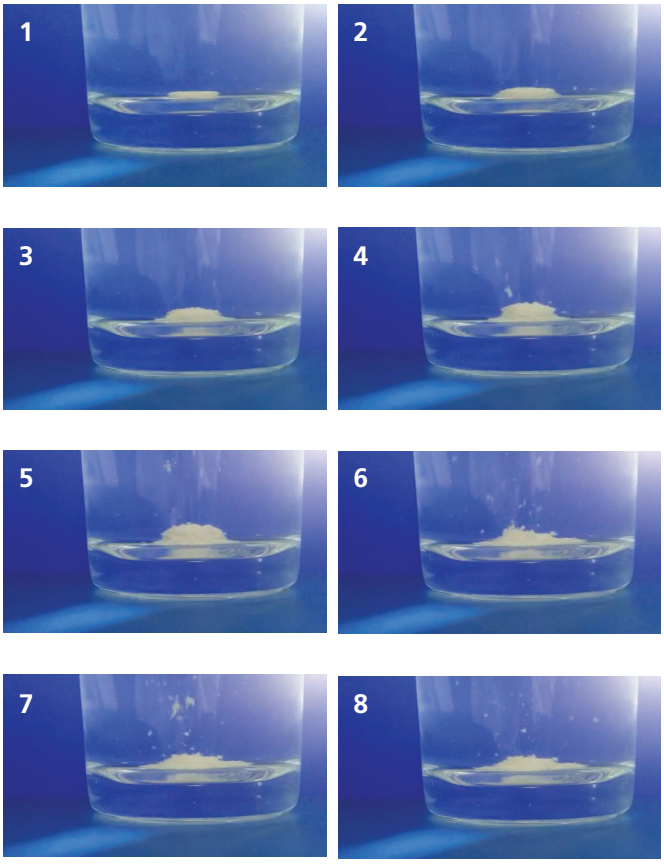
Losartan potassium loaded Omyapharm FCC: little changes in dissolution rate were observed but might be an advantage when low doses have to be administered.

Omyapharm FCC for Orally Dispersible Tablets (ODTs)

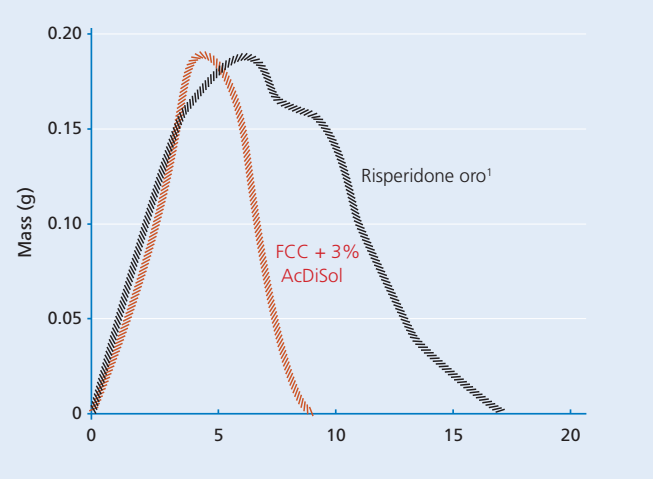
Stirnimann et al. (2013) Pharmaceutical Research (2013) 30:1915–1925

ODTs are an alternative dosage form for patients who experience diffulty in swallowing, such as elderly and long term care patients as well as children.

Disintegration capacity of ODTs prepared by direct compression depends on tablet size and hardness. The harder the tablet the longer the disintegration time. ODTs formulated with Omyapharm FCC can be designed to have sufficient mechanical strength and disintegrate fast.



Disintegration of an Omyapharm FCC formulated tablet in 10 seconds.

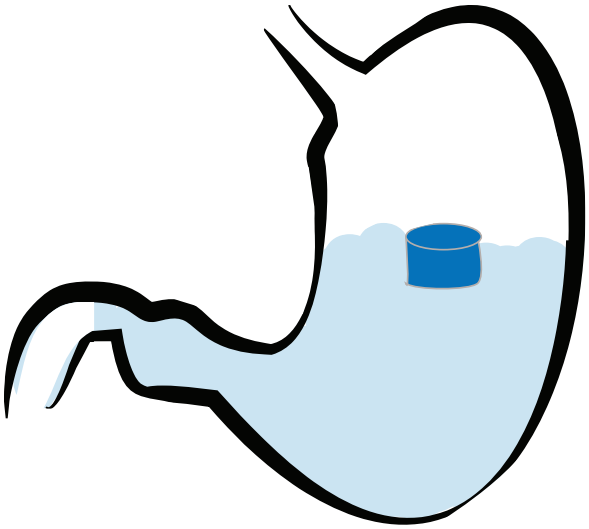


Disintegration profile of Omyapharm FCC formulations are equal as that of the market formulation Risperidone Oro

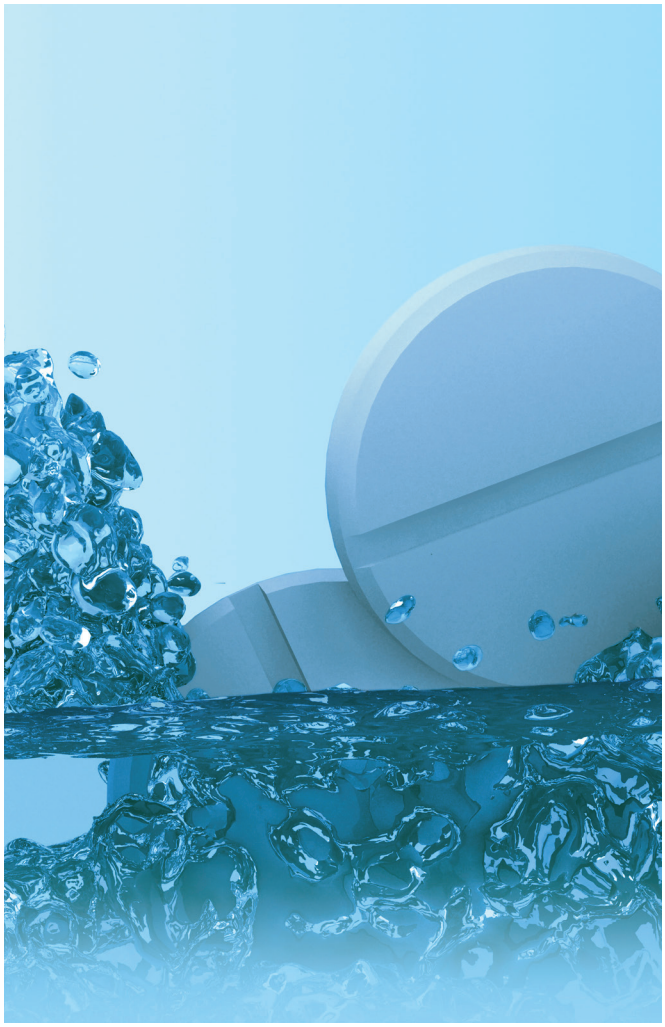
Omyapharm FCC for Floating Drug Delivery Systems (FDDS)

Eberle et al. (2014) European Journal of Pharmaceutical Sciences 58: 34-43

FDDS float in the stomach while releasing the drug they carry, due to their lower density compared to the gastric fluids. Thus, FDDS improve bioavailability of drugs whose site of action or absorption is located in the stomach or upper intestinal tract by increasing the gastric residence time. Given the low densities of Omyapharm FCC- based tablets, Omyapharm FCC is a promising novel pharmaceutical excipient for the preparation of FDDS.



Schematic representation of a FDDS in the human stomach



Formulation	Omyapharm FCC (%)	Polyox WSR 301 (%)	Methocel K100 (%)	Citric acid (%)	Lubritab (%)	Caffeine (%)
HF1 (hydrophilic)	56.25	7.50	10.875	0.375	0.00	25.00
LF2 (lipophilic)	37.50	5.00	0.000	0.000	40.83	16.67

	Formulation HF1 (hydrophilic)	**Formulation LF2** (lipophilic)
No Floating lag time	+	+
Floating behavior	Tablets eroded completely while releasing drug substance	Lipophilic matrix remained after complete drug release
Floating time	90 min	Several days
Drug release	100% caffeine released after 90 min	100% caffeine released after 17 h
Drug release mechanism	Erosion controlled	Diffusion controlled

Our Technical Services and Innovation Department can assist you in finding the optimal formulation with Omyapharm FCC and your API.

Natural Products for Sustainability

Omya - Swiss based Corporation

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Contact:
Dr. Michael Skovby

Phone: +41 62 789 2260
Mail: Michael.Skovby@omya.com

THIS PAPER CONTAINS OMYA PIGMENTS

Omya International AG I Baslerstrasse 42 I 4665 Oftringen I Switzerland I www.omya.com