

# Mathematical models as tools to predict the release kinetic of fluorescein from monoglyceride colloidal liquid crystals

Donatella Paolino <sup>1</sup>, Andra Tudose <sup>1,2</sup>, Christian Celia <sup>2,3,\*</sup>, Luisa Di Marzio <sup>3</sup>, Felisa Cilurzo <sup>3</sup> and Constantin Mircioiu <sup>2,\*</sup>.

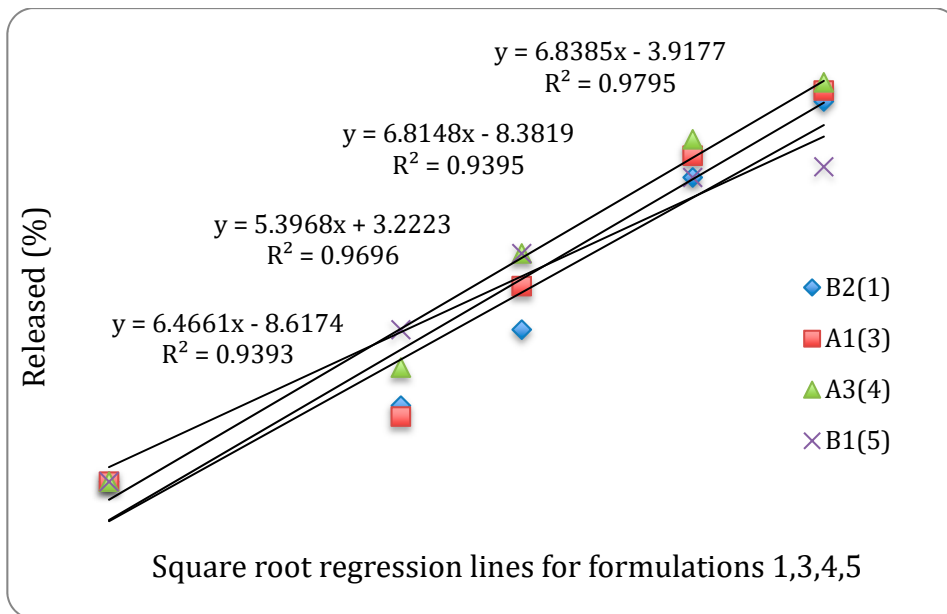
<sup>1</sup> University of Catanzaro "Magna Graecia", Department of Experimental and Clinical Medicine, Viale "S. Venuta" s.n.c., 88100 Catanzaro, Italy; [paolino@unicz.it](mailto:paolino@unicz.it)

<sup>2</sup> University of Medicine and Pharmacy "Carol Davila" Bucharest, Faculty of Pharmacy, Department of Applied Mathematics and Biostatistics, 6 Traian Vuia, 020956, Bucharest, Romania; [andratds@yahoo.com](mailto:andratds@yahoo.com) (Andra Tudose); [constantin.mircioiu@yahoo.com](mailto:constantin.mircioiu@yahoo.com) (Constantin Mircioiu)

<sup>3</sup> University of Chieti - Pescara "G. d'Annunzio", Department of Pharmacy, via dei Vestini 31, 66100 Chieti, Italy; [c.celia@unich.it](mailto:c.celia@unich.it) (Celia Christian); [luisa.dimarzio@unich.it](mailto:luisa.dimarzio@unich.it) (Luisa Di Marzio); [felisa.cilurzo@unich.it](mailto:felisa.cilurzo@unich.it) (Felisa Cilurzo)

\* Correspondence: [c.celia@unich.it](mailto:c.celia@unich.it) (Christian Celia), [constantin.mircioiu@yahoo.com](mailto:constantin.mircioiu@yahoo.com) (Constantin Mircioiu); Tel.: +39 08713554711 (Christian Celia), Tel.: +40 723175022 (Constantin Mircioiu).

**Keywords:** monoglyceride colloidal liquid crystals; release profile; mathematical models; drug delivery systems; release kinetic; square root laws.



**Supplementary Figure 1.** *T*-test applied to compare the linear regression for Square root equation for formulations 1, 3, 4 and 5.

Equation S1:

$$T_{n_1+n_2-3} = \frac{(a_1 - a_2) - b(\bar{x}_1 - \bar{x}_2)}{S \sqrt{\frac{1}{n_1} + \frac{1}{n_2} + \frac{(\bar{x}_1 - \bar{x}_2)^2}{\sum (x_{i1} - \bar{x}_1)^2 + \sum (x_{i2} - \bar{x}_2)^2}}}$$

The extreme values of slopes were 5.39 and 6.83, respectively.

$$H_0 : \alpha_1 + \beta_1 x \equiv \alpha_2 + \beta_2 x$$

A probability greater than 0.95 showed that  $H_0$  hypothesis is the linear range, similar for different formulations and cannot be rejected.