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DEVELOPMENT OF FLURBIPROFEN MICROEMULGEL

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Abstract

Topic application of Non Steroidal Anti Inflammatory Drugs (NSAIDs) presents the big advantage to avoid side effects caused by their oral administration. Among the topic forms, Microemulgel is a new topical dosage form thermodynamically stable and very interesting to enhance cutaneous permeability. Our objective was to formulate and characterize a microemulgel containing 5% of flurbiprofen.

Methods : Flurbiprofen microemulsion 5% was prepared by titration method with three excipients, olive oil, Tween 80 and Span 80. The adequate microemulsion proportions were determined in the pseudo-ternary diagram. Flurbiprofen was dissolved in the preparation by magnetic agitation. To obtain Flurbiprofen microemulgel, 1% of Carbopol 934 was added to the previous microemulsion. Microemulgel was characterized by transmittance, particle size, refractive index, conductivity, viscosity and stability was evaluated by freeze-thaw cycle test.

Results : Flurbiprofen Microemulgel 5% prepared was transparent (100% of transmittance), stable with low viscosity and pH. Globule size was characterized by 104.4 ± 66.13 nm of diameter and refractive index was 1.474 ± 10^{-5}**.**

Conclusion : Microemulgel containing 5% flurbiprofen presents very interesting characteristics for topical administration. This innovation can provide more efficiency to treat rheumatism and inflammatory diseases.

Key Words: **:** antiinflammatory, carbopol, formulation, microemulsion, topic application

1- Introduction

Rheumatic Inflammatory Diseases (RID) are very painful pathologies. They affect many people in the world and evolve to chronic forms with high morbidity. In Algeria, 50% of RID are responsible of fonctionnal difficulties [1]. The treatment is essentialy based on Non Steroidal AntiInflammatory Drugs (NSAID) which lead to severe gastrointestinal side effects after oral administration. NSAID Topical forms represent a good alternative in this case, however their cutaneous absorption is very limited and articular zone cannot be reached [2,3].

To overcome these difficulties and to enhance the cutaneous permeability of NSAID, new galenic formulations are developed. Among innovative topic forms, microemulsion (ME) provides very interesting proprieties to increase cutanous absorption. They consist of dispersed system with very narrow tenuity (10- 100 nm), characterized by thermodynamic and cinetic stability [4,5]. Their combinaison with an hydrogel lead to a microemulgel (MEG) form which provides more efficiency and stability to the ME dispersion [6].

In this work, we developed and characterized a MEG of flurbiprofen (FLU) 5% intended to anti rheumatic pathologies.

2- Material and method

Flurbiprofen Microemulgel (FLU-MEG) was developped according to theses different steps :

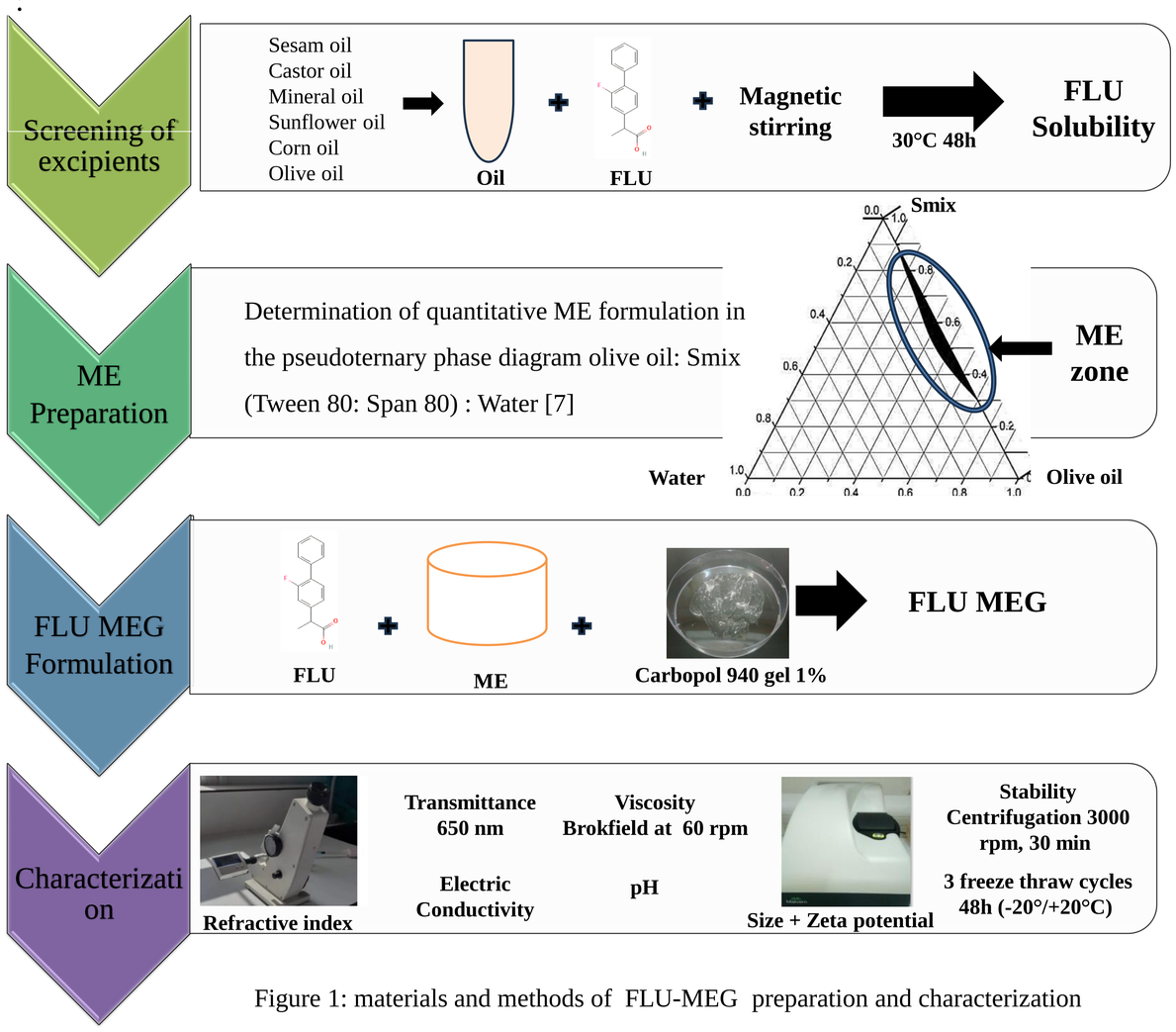

Figure 1: materials and methods of FLU-MEG preparation and characterization

3- Results & discussion

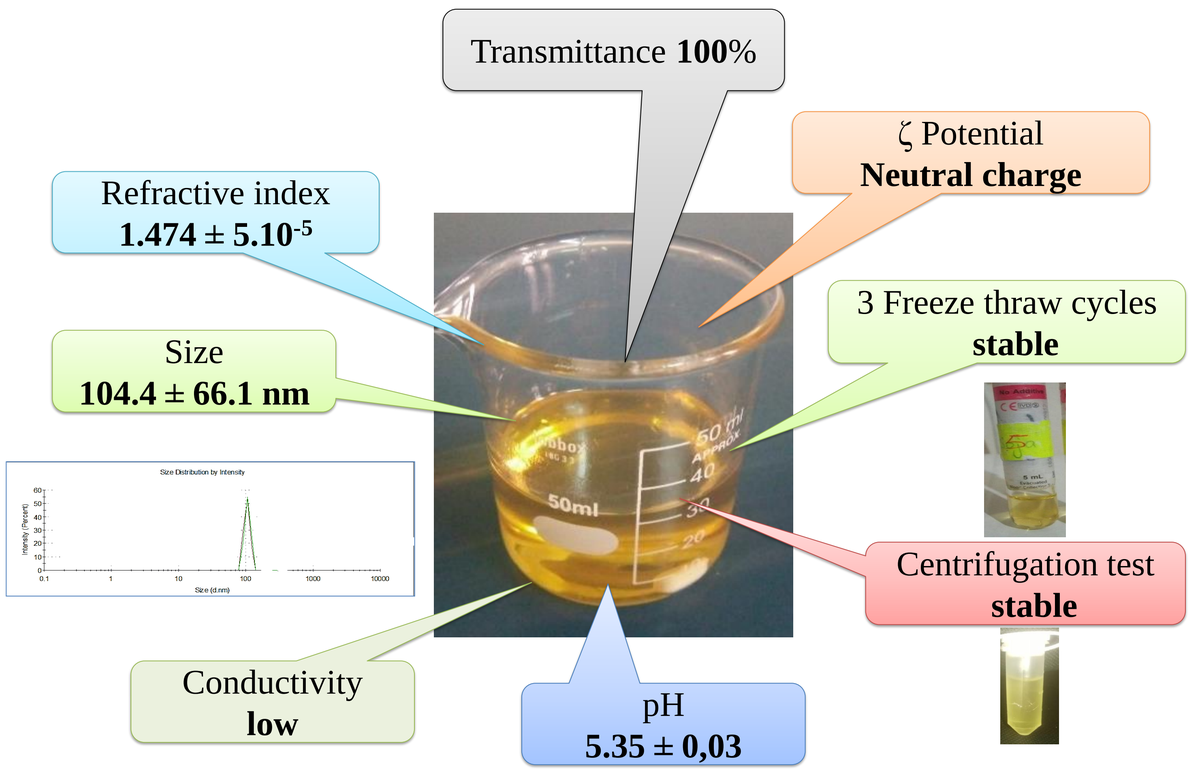

Figure 2 : results of ME and MEG of FLU 5%

Table 1 : compositions and some characteristics of FLU MEG in litterature

	FLU-MEG	[8]	[9]	[10]
Viscosity (cp)	350	108100	400	/
Composition	FLU 5% Olive Oil (56%) Tween 80: Span 80 (1:1), (40%) Carbopol 940 NaOH Water	FLU 3% Arachis Oil Tween 80 : propylene glycol Carbopol 934 Triethanolamine Water	FLU 5% Acid oleic (5%) Tween 20 : ethanol (2 :1) Carbopol 934 (46%) Triéthanolamine Water (44%)	FLU 1% Clove oil (8.33%) Tween 80 : transcutol (33.33%) Carbopol 934 (1%) Triethanolamine Water

4. Conclusion

FLU-MEG 5% is very interesting form for anti inflammatory and anti rheumatic treatment. Formulation of stable and efficient MEG can be hard and laborious and needs complementary *invitro/ invivo* investigations to achieve FLU-MEG characterization.

5. References

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