Reply to the comment of Rothschild B. "Maltese cross interpretation"

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We thank Rothschild B. [1] for the attention paid to our review on arthritis induced by phopholipid microspheres [1]. It is highly probable that all microcrystals may form extra cellular microspherules under certain physicochemical conditions (as with a decrease in temperature in the case of delayed examination of the synovial fluid and in the presence of a high protein or lipid concentration in the synovial fluid). This is the case with sodium urate and various calcium crystals (carbonate, phosphate, pyrophosphate or calcium oxalate) [2-4]. The latter differ by their birefringence polarity and their Alizarin red staining potential (Table 1). Recently, Li B *et al.* [5] have reported a series of 174 frozen synovial fluids, about 5% of which contained negatively birefringent alizarine red stained microspherules, which were on Raman spectroscopy predominantly composed of calcium carbonate rather than calcium phosphate less favorable in the formation of microspherules.

We therefore insist on the importance of demonstrating the intra-leukocyte position of the spherules (which eliminates a hypothetical post-puncture formation), on the positive polarity of birefringence and as recalled by Rothschild B., on their well-defined contour (unlike those formed by starch) to assert pathological character of phospholipid microspheres.

References

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Table 1. Characteristics of the different microcrystals which can be organized into microspherules in the synovial fluid.

Microcrystals microspherules	Delay after puncture of synovial fluid	intra-leukocyte position	birefringence polarity	well-defined contour	alizarine red
Sodium Urate	After few min	No	Negative	No	No
Calcium pyrophosphate	After few min	No	Positive	-	Yes (10min)
Apatite	Immediate, fresh condition	Yes	Negative	Yes	Yes (<3min)
Calcium oxalate	After few min	No	Positive	-	Yes (30min)
Phospholipids	Immediate, fresh condition	Yes	Positive	Yes	No
Starch	Immediate, fresh condition	No	Positive	No	No