Wire-like formations produced in BG1188 solutions: Optical and electronic microscopy measurements

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Quinazolines and quinazoline derivatives are an important group of compounds due to the variety of their pharmaceutical properties which lead to important effects such as: diuretic phenomena, antihypertensive and anticancer action, anti-allergic, antifungal and anti-infective effects.

During stability studies performed on quinazoline derivative BG1188 (and presented in the oral exposure "Characterization of Stability of BG1188 Compound in Ultrapure Water and DMSO by Spectral Studies"), aggregation phenomena took place that produced precipitates in the form of thin wires, of different dimensions (lengths and diameters) and shapes observed initially with the naked eye.

The BG1188 solutions were prepared in ultrapure, de-ionized water and in DMSO. The concentration range was: 10^{-6} M to $2x10^{-3}$ M. The solutions were kept in dark; two cases were studied: samples kept at 4°C and samples kept at room temperature, 22°C.

The wire-like formations are produced gradually, starting from the first hours of the solutions preparation. These were observed in all samples regardless of the solvent, concentration or the conditions in which the solutions were kept.

Because the computed degree of polymerization was 1.018, these precipitates can not be polymers. For all concentrations, at all times, BG1188 was present in solution only in monomer form.

At later stages, these wires mould into aggregates/clusters. The images of the aggregates which are shown were obtained using an optical microscope working in reflection, transmission or epifluorescence. The pixel dimension on the probe varies from 1.08 μm for 5X objective to 0.05 μm for 100X objective.

Electron microscopy investigations revealed that the precipitates are built from spherical, micrometric formations which develop connections leading to the wire-like shapes and are very stable with temperature.