Title: **Activators for anionic polymerisation of mono substituted acrylic acid ester**

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Date: June 2019

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Acrylic monomers are used as coatings for different purposes. Nowadays, semi-permanent nail polish is becoming a very important application. One of the main drawbacks of this approach is that it requires the use of N,N-dimethyl-para-toluidine (DMPT) as polymerisation activator. DMPT is a toxic and harmful substance and it is desirable to find a safer alternative that could match the performance obtained when DMPT is used. In this work three substances have been tested: N-benzyl-N-ethylaniline, quinine and caffeine. In addition, the possibility of decreasing the concentration of DMPT in the activator solution has been also studied.

In order to prove that the selected substances are capable of polymerising the reaction with cyanoacrylates, DMPT, la N-benzyl-N-ethylaniline, quinine and caffeine have been dissolved in ethyl acetate to obtain solutions at different concentrations. These solutions have been applied to poly(methyl methacrylate) pieces (PMMA) that have been painted with one of the cyanoacrylates selected: ethyl cyanoacrylate and 2-methoxy ethyl cyanoacrylate.

Of all substance tested, caffeine has been the only one substance to show results are comparable to DMPT. In addition, taking into account the aesthetic approach of this project to semi-permanent nail technology, the results obtained in the real application of the product referring to shininess by caffeine and DMPT application are practically the same.

Keywords: Polymerisation, cyanoacrylate, N,N-dimethyl-para-toluidine, caffeine.