Utilizarea unor polimeri derivatizati cu fluorocromi drept agenti de vizualizare pentru monitorizarea unor procese celulare

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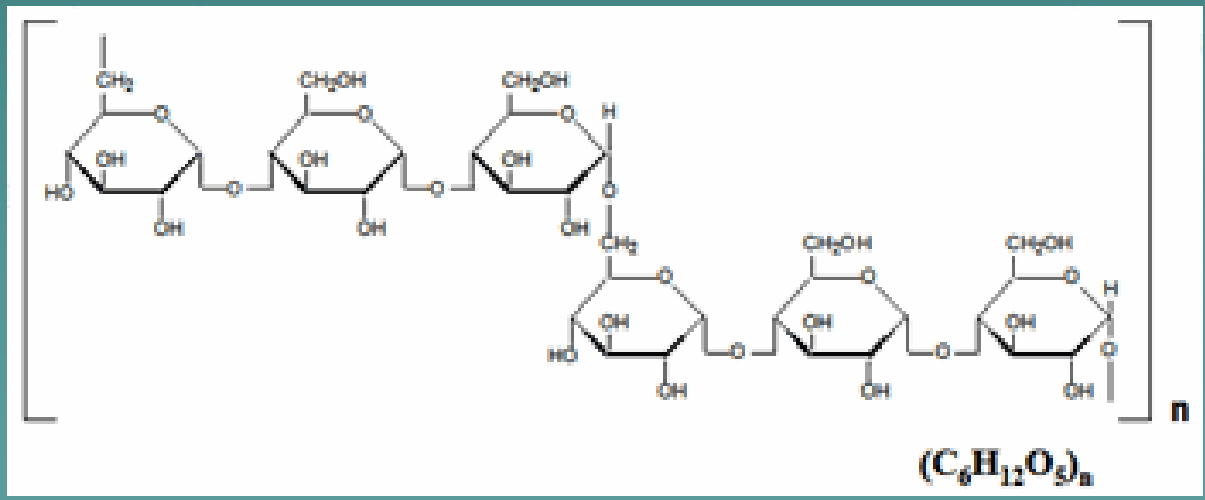
Pullulan - General information

- Pullulan is a linear polysacharide, produced by *Aureobasidium pullulans*
- A key fature is its capacity to form thin films, impermeable to oxygen
- Main uses of pullulan are in pharmaceuticals, nutraceutics and food industry, as coating agent and tableting adjuvant
- Having a large molecular weight, it is suitable for various types of derivatizations, which may lead to the development of new applications, as drug carrier and also as tracer for controlled drug distributions

- Structure:



Dansyl pullulan

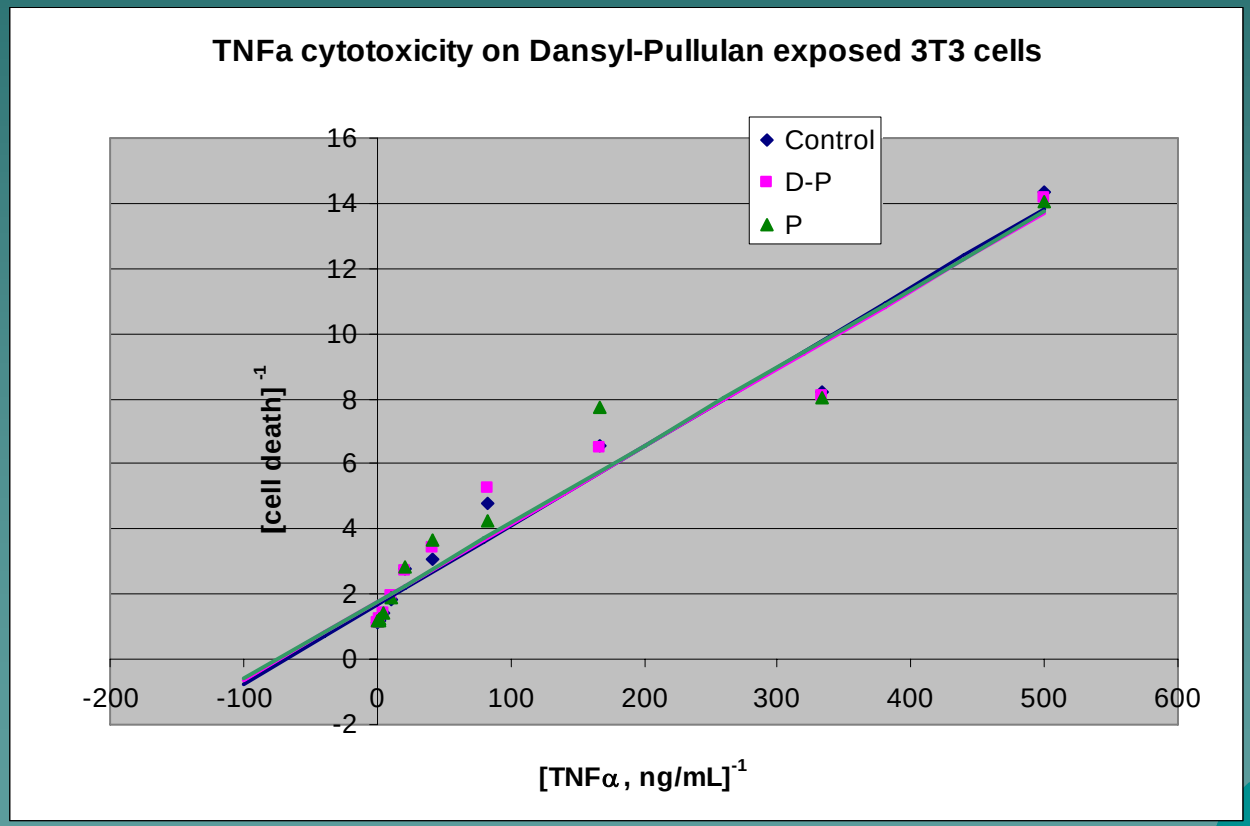
- *Pullulan was derivatized by addition of dimethylamino-naftalene sulphonic acid residues (up to 1 group per glucose subunit)*
- Dansyl confers to the product an intense green fluorescence, suitable for instrumental detection methods such as top and bottom fluorescence microplate readers, polarized fluorescence
- Dansylated pullulan can be used as a tracer to monitor distribution; since the polysaccharide can support multiple functionalization, the carbohydrate core –chain may “accommodate” therapeutic molecules and also gudiance molecules, thus forming a higly selective carrier.
- Dansyl group is not essential for the famraceutical therapeutic forms, but may prove useful in research steps, since distribution pf polysaccharide-linked molecules may be estimated using the fluorescent probe

In vitro toxicological investigations

- Experimental models:
  - 3T3 cells (fibroblasts)
  - Human macrophages
- Approach:
  - Pre-cultivated cells (70% confluence) are exposed to product concentrations ranging 10^{-3} – 10 μg/mL
  - Exposure time was 6-24 hrs in standard conditions

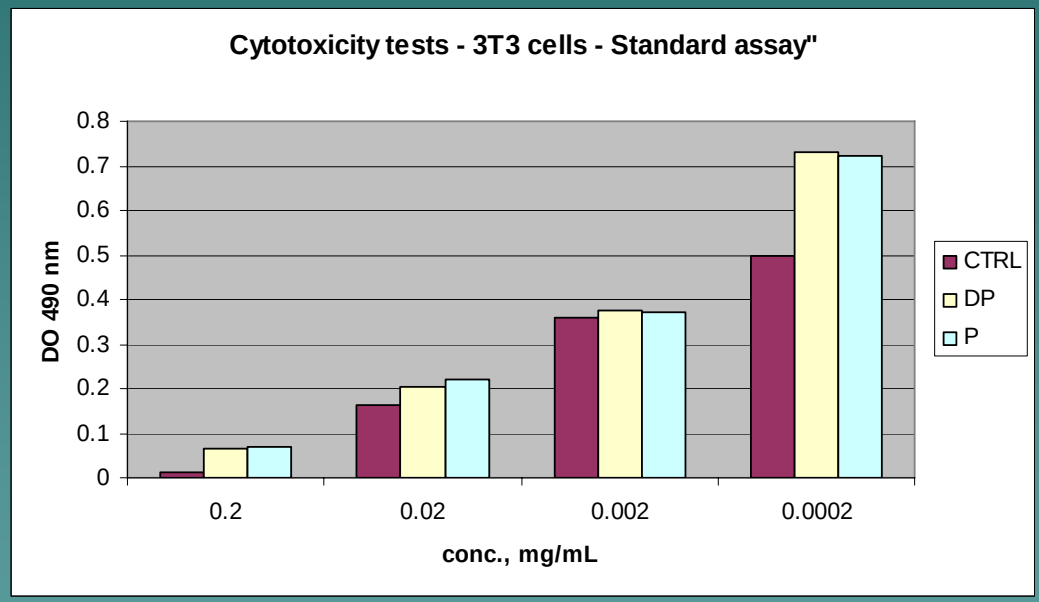
In vitro toxicological investigations

- Results



In vitro toxicological investigations

- Results



In vitro toxicological investigations

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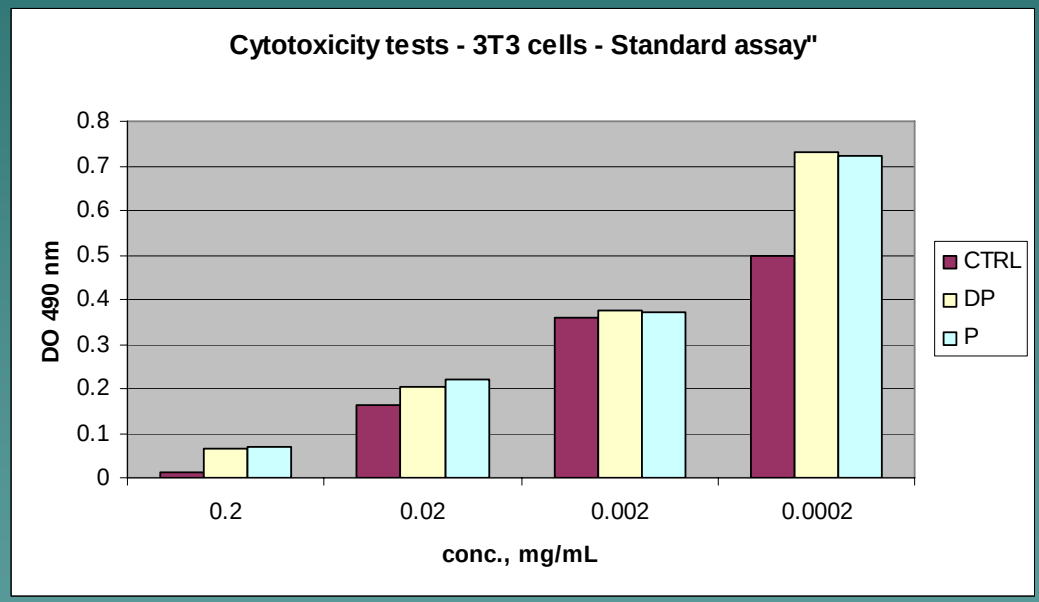

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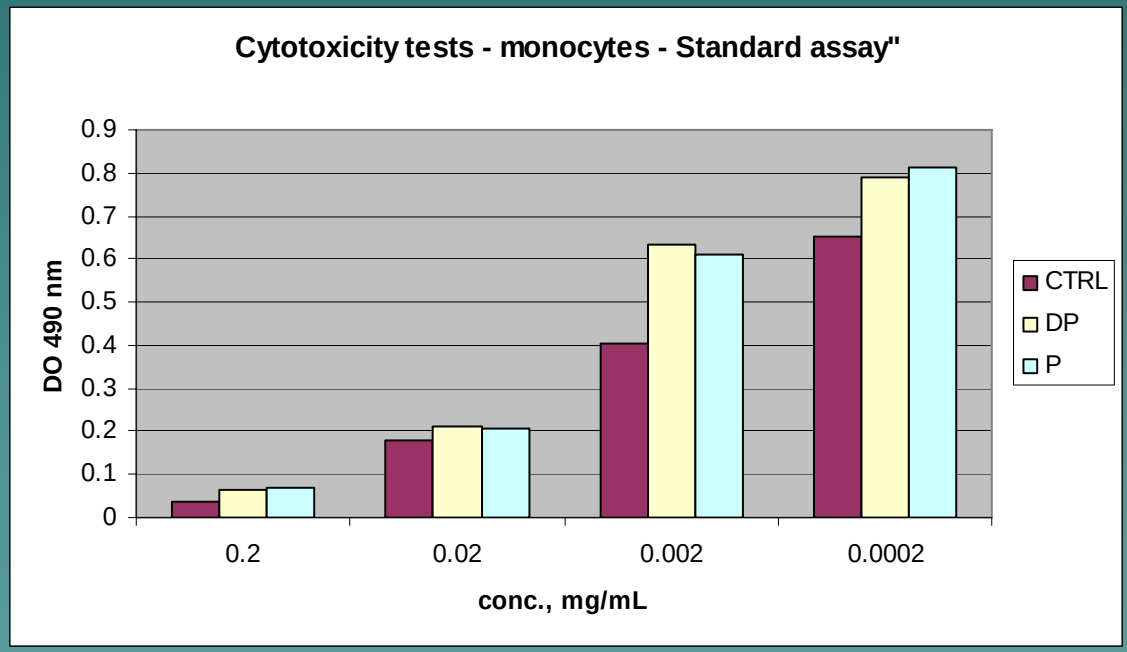
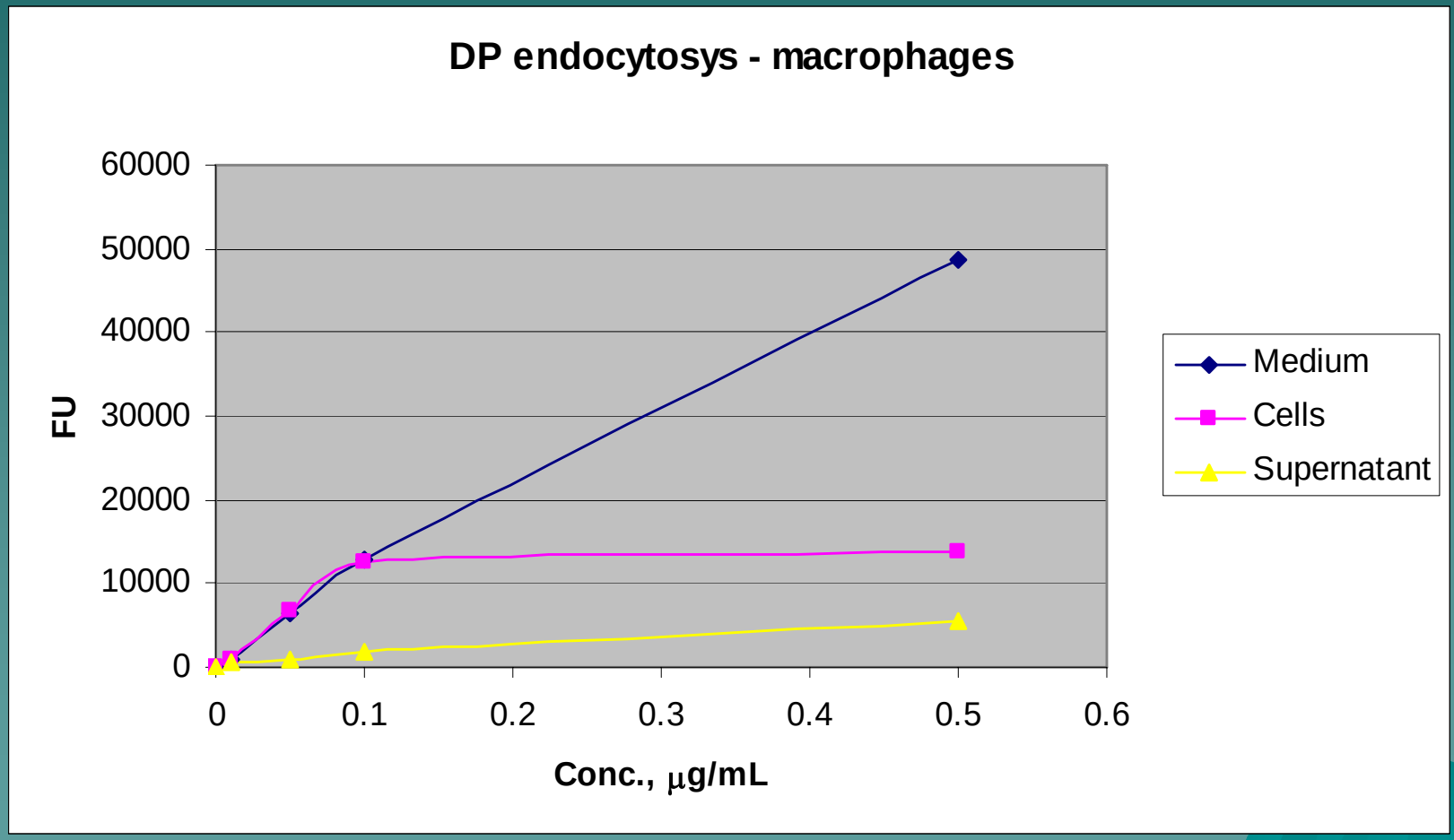


Cellular accumulation



Cellular accumulation