POSTERS

P11 - HOT MELT EXTRUSION AS AN EFFECTIVE TOOL TO IMPROVE RELEASE RATES OF POORLY WATER-SOLUBLE DRUGS.

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PURPOSE
To analyze the influence of different types of drugs & excipients on the suitability of hot melt extrusion to increase the drug release rate of poorly water- soluble drugs.

METHODS
10, 20 and 30% (w/w) ibuprofen were extruded with polyvinylcaprolactam-polyvinylacetate-polyethyleneglycol-graft-copolymer (Soluplus®) as well as 20 and 40% griseofulvin which were extruded with polyvinylpyrollidone (PVP, Kollidon® K30) under addition of sorbitol as a plasticizer (20% to 30% w/w) in a co-rotating twin screw extruder, equipped with 4 heating zones kept at 45, 87, 140 & 175°C for ibuprofen (constant screw speed of 50rpm) and 130°C for griseofulvin (the screw speed was varied from 30 to 200rpm). The extrudates obtained were characterized by DSC analysis, X-ray diffractometry and dissolution studies in agitated flasks (500mL, 37°C/80rpm) for ibuprofen and in a USP paddle apparatus at 37°C, 100 rpm for griseofulvin.

RESULTS
Brittle, opaque white extrudates were obtained by extruding 40% of griseofulvin with PVP (under plasticizer addition) and flexible clear, colourless extrudates were obtained when ibuprofen was extruded with Soluplus®. DSC and x-ray diffractometry proof that ibuprofen is dissolved within the polymeric matrix (in its amorphous stage) possibly due to its low melting point. This effects drug release which seems diffusion controlled. Griseofulvin in contrast remained crystalline within the polymer PVP, but these solid dispersions still showed improved drug release rates.

CONCLUSIONS:
Hot melt extrusion led to solid dispersions when griseofulvin was co-extruded with PVP showing increased drug release rates. In the case of ibuprofen, the flexible extrudates (as the drug is a very good plasticizer for the polymer) represented solid solutions