Wissenschaftliche Posterausstellung: Poster 7

Rheological method to develop novel cerates as potential substitutes for White Soft Paraffin

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Introduction

Due to the natural limitation of crude oil and new safety precautions for the paediatric population [1], there is the need for alternative ointment bases for the commonly used White Soft Paraffin (WSP).
Cerates, defined as a mixture of natural or semisynthetic wax and liquid oil, are promising candidates for substitution.
For non-Newtonian substances like WSP, there are two aspects of particular importance:

- They show reconstruction over time [2].
- Rheological parameters depend on the structure-generating compounds [3].

Aim

The aim of this work was to improve a rheological method [2] in order to characterize novel semi-solid substitutes for WSP and to facilitate pharmaceutical development of new medicines.

Material and methods

WSP (Caesar & Loretz, Hilden, Germany), was compared to cerates containing White Beeswax (WB) (Caesar & Loretz, Hilden, Germany) and Medium-Chain Triglycerides (MCT) (Miglyol 812, Sasol, Hamburg, Germany). WB was melted together with MCT at 80-85 °C on a water-bath and allowed to cool down to room temperature while stirring manually. The mixtures were prepared with different WB quantities, from 12,5 % to 22,5 %. WSP was treated in the same way.

The rheological measurements were performed with a Kinexus Rotational Rheometer (Malvern Instruments, Worcestershire, United Kingdom) with cone-plate equipment: 20 mm diameter with 1° cone-angle and a stainless steel plate.