The aim of this study was to investigate the resulting tablet properties [1, 2]. Magnesium stearate was purchased from BASF SE, Germany.

Kollidon® CL, Kollidon® CL-F, Kollidon® 90 F (BASF SE, Germany). Kollidon® copovidone are used to improve tablet properties. Wet binders such as povidone and VA 64 and Kollidon® 90 F® VA 64 and Kollidon® 90 F have good flow properties that enable reproducible die filling, uniformity of content as well as improving the tablet size distribution was analyzed by laser diffraction (Mastersizer 2000, Malvern Instruments, England).

The tablets were manufactured on a single punch press (XP1, Korsch, Germany) applying the top spray method. The granulated powders were sieved through a 0.8 mm mesh and blended with 3% a). compressed at 10 kN

Effect of the disintegrant on the friability of tablets

Compared to Kollidon® CL-SF, Kollidon® 90 F® VA 64 and Kollidon® 90 F increased the tablet hardness of tablets. Reducing the particle size of the disintegrant from 118 µm (Kollidon® CL) to 17 µm (Kollidon® CL-SF) led to a further increase in tablet hardness.

Disintegration time of tablets compressed at 18 kN

Conclusion

Within the investigated wet binders Kollidon® 90 F exhibited the strongest agglomeration effect.

In granulation and compression Kollidon® VA 64 and Kollidon® 30 resulted in similar tablet properties.

Increasing particle size of the disintegrant (Kollidon® CL, Kollidon® CL-F, Kollidon® CL-SF) enhanced tablet hardness and reduced friability.

The highest impact on friability came from the type of binder used for granulation. The high molecular weight of Kollidon® 90 resulted in stronger compacts in comparison to Kollidon® 30 irrespective of the applied compression force (Figure 3). Application of the largest crospovidone grade Kollidon® CL led to fastest disintegration times (Figure 4).

Influence of the disintegrant on the hardness of tablets a) compressed at 10 kN

The powder properties were evaluated in accordance with the Ph. Eur. method. Particle size distribution was analyzed by laser diffraction (Mastersizer 2000, Malvern Instruments, England).

Tablets: Tablet hardness, friability and disintegration time were characterized in accordance with the Ph. Eur.

Introduction

For poorly compressible drugs wet granulation is a common method used to produce granules suitable for compression. The granules have good flow properties that enable reproducible die filling, uniformity of content as well as improving the tablet properties. Wet binders such as povidone and copovidone are used to improve tablet strength and friability. However, all ingredients of a formulation contribute to the resulting tablet properties [1, 2].

Ascorbic acid (Regular Powder, BASF SE, Germany) served as a model drug. Wet binders used: Kollidon® 30, Kollidon® VA 64 and Kollidon® 90 F (BASF SE, Germany).

The investigated disintegrants were Kollidon® CL, Kollidon® CL-F, Kollidon® 90 F® CL-SF (BASF SE, Germany). Magnesium stearate was purchased from Bärlocher (Germany).

### Formulation

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Formulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ascorbic Acid</td>
<td>94.5%</td>
</tr>
<tr>
<td>Binder</td>
<td>1.5%</td>
</tr>
<tr>
<td>Disintegrant</td>
<td>3.0%</td>
</tr>
<tr>
<td>Magnesium Stearate</td>
<td>1.0%</td>
</tr>
</tbody>
</table>

Table 1

### Wet granulation

Ascorbic acid was granulated in a fluidized bed granulator (Glatt GPCG 3.1, Glatt, Germany) applying the top spray method. The rate of binder addition was adjusted to 20 g/min of a 8% solution, the air flow was set to 80 m³/h and the bed temperature was kept at 55°C.

### Compression

The granulated powders were sieved through a 0.8 mm mesh and blended with 3% ascorbic acid.

### Results and Discussion

### Granulation

The influence of the binder type on the granulation characteristics was determined by the resulting particle size of granulated ascorbic acid.

### References