Achieving blend homogeneity is an important criterion for formulating micronized drugs. The volume mean particle diameter of the model drug was 35 μm. Each filler and the deagglomerated micronized drug was weighed to make a 3 kg batch and blended in an 8 kg blender (Patternson K-10, USA) in layers and blended up to 12 minutes (Figures 1-5).

Samples for blend uniformity (Bl) testing were taken from six predefined locations in the blender, i.e., top, center, and bottom, on the left and right side of the blender, using a powder sampling thief after 3-min intervals of blending, i.e., 3, 6, 9, and 12 min. Powder sample size was 250 mg to 750 mg, equal to 1–3 times the tablet target weight. Samples were assayed individually, and the results were used to calculate the arithmetic mean and the relative standard deviation (RSD). Blends were considered uniform if the mean value was within the range of ±15% of the target potency, and the RSD value was less than 5% (based on FDA draft guidance). The results are shown in Table 2.

The average potency assay of 97.9% and the low RSD of 1.2% for Starch 1500 met the specification for BU at 3-min blending time with no significant change at 6-min blend time. This indicated that excipient type may have an influence on the blending time for a micronized drug at a low dose of 1%. It has been reported that irregular surfaces of Starch 1500 particles are suitable for micronized drug adsorption, rendering content uniformity of a formulation with low dose drug.

Blends of Fillers

The choice of filler for a low-dose micronized drug may assist dispersion and uniformity of the drug throughout the blend. Although micronized drugs have a tendency to agglomerate, their surface area is increased, thereby increasing their dispersability. The choice ofFiller type affects blend uniformity. Filler with irregular surface characteristics, such as Starch 1500, makes it suitable for micronized particle behavior and behaves as a carrier, rendering content uniformity. Previous tablet formulation studies have indicated that Starch 1500 and MCC mixtures provided excellent blend uniformity, with good compression and disintegration properties. 

Conclusions

References

6. Conclusions

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