**INTRODUCTION**

- Oleanolic acid (OA), well known for its hepatoprotective effect, has been shown in vitro to be cytotoxic in A549 human non-small-cell lung cancer cell line. Thus, it may be potentially useful for lung cancer treatment. Being a BCS Class IV drug, it has low oral bioavailability. Therefore, inhalation is the preferred route of administration for local delivery.

- The aim of this study is to develop an inhalable oleanolic acid dry powder formulation.

- The molecular structure of OA is shown below.

**Methods**

- OA was spray dried from an acetone solution using a Büchi B-290 Mini Spray Dryer. The spray dried powder was characterized and compared with raw OA.

- Particle morphology was observed by scanning electron microscopy (SEM), whereas aerodynamic performance was measured by dispersion from an Osmohaler™ into a Next Generation Impactor (NGI).

- The solid state of dry powders was studied by thermal analysis and X-ray powder diffraction.

**RESULTS**

- SEM pictures of raw (A, C) and spray dried (B, D) OA particles before (A, B) and after (C, D) dispersion.

- Raw OA particles were needle-like, while the spray dried ones were corrugated spherical of 0.5–3 µm in diameter.

- After dispersion, spray dried OA could be dispersed into primary particles while the raw material seriously agglomerates.

**CONCLUSION**

An OA dry powder formulation was successfully prepared by spray drying. It showed excellent aerosol performance (63% FPF) and may be useful for pulmonary delivery.

**References**