

## **BIOPHYSICAL ACTIVITY OF ANIMAL-DERIVED EXOGENOUS SURFACTANTS ENRICHED WITH RIFAMPICIN**

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**Introduction:** Exogenous surfactant is a potential delivery system for antibiotics to the alveolar compartment. However, little is known about the interactions between surfactant and antimicrobial drugs.

**Aim:** The aim of the study was to evaluate whether biophysical properties of animal-derived surfactants are modified by bactericidal antibiotic drug rifampicin.

**Methods:** Curosurf® (porcine surfactant from minced lungs) and Survanta® (bovine surfactant extract) were diluted to 2.5–5 mg/ml of phospholipids in saline and rifampicin was added at 1%, 5% and 10% (w/w). Minimum (gmin) and maximum (gmax) surface tension of the mixture was assessed with a pulsating bubble surfactometer (PBS).

**Results:** After 5 min in PBS, gmin of Survanta at concentration of 3 mg/ml was significantly inactivated by addition of 5% and 10% rifampicin (both  $P < 0.001$ ), but not 1%. gmin of Curosurf at 3 mg/ml was increased only with 10% rifampicin ( $P < 0.001$ ). At 5 mg/ml Survanta was inhibited by 10% rifampicin ( $P < 0.05$ ) while gmin of Curosurf at 5 mg/ml was low ( $< 5$  mN/m) in all surfactant-antibiotic mixtures.

**Conclusion:** Curosurf and Survanta interfere with rifampicin in concentration-dependent manner. At appropriate phospholipid concentration animal-derived surfactants are able to retain good surface activity when mixed with antibiotics.

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