European Respiratory Society
Annual Congress 2013

Abstract Number: 5069

Publication Number: P1591

Abstract Group: 5.1. Airway Pharmacology and Treatment

Keyword 1: Anti-inflammatory **Keyword 2:** Pharmacology **Keyword 3:** Asthma - management

Title: Dehydroepiandrosterone in the treatment of steroid resistant asthma: Whether synthetic nanoform can replace the natural hormone?

Dr. Galina 22524 Shmarina sakmarariver@yahoo.com [1], Prof. Dr Alexander 22525 Pukhalsky osugariver@yahoo.com MD [1], Dr. Anastasia 22526 Utekhina anastasia.utehina@gmail.com [2], Prof. Dr Gleb 22527 Sergeev gbs28@rambler.ru [2], Dr. Olga 22528 Kozyreva kozyreva-11@mail.ru [3], Dr. Tamara 22529 Vylegzhanina doctoma56@mail.ru MD [3] and Prof. Dr Vladimir 22535 Alioshkin info@gabrich.ru MD [4]. [1] Department of Cystic Fibrosis, Research Centre for Medical Genetics, Moscow, Russian Federation ; [2] Department of Chemical Kinetics, Moscow State University, Moscow, Russian Federation ; [3] Department of Asthma, NRC Institute of Immunology, Moscow, Russian Federation and [4] Laboratory of Cytokines, G.N. Gabrichevsky Institute of Epidemiology and Microbiology, Moscow, Russian Federation .

Body: Efficiency of dehydroepiandrosterone (DHEA) in asthma treatment has been recently shown in multicenter randomized, placebo-controlled trial [1]. But the poor solubility of DHEA and its metabolites restrains the progress in this area. The problem may be resolved by the synthesis of nanoparticles of the hormone using the methods of cryochemical synthesis. The aim of this study was to evaluate peripheral blood lymphocyte (PBL) sensitivity to antiproliferative effect of Dexamethasone (Dx) and DHEA metabolites in asthmatic patients resistant to steroid therapy. Individual PBL susceptibility to Dx and DHEA metabolites including androstendiol (ADL), ADL in the form of nanoparticles (nADL), and β-thiol was evaluated by ED_{50} calculation. PBL from both sensitive and resistant patients were investigated. Susceptibility to Dx of sensitive cells was high (ED_{50}=8.9 nM); ED_{50} for resistant patient was impossible to calculate. However, the cells obtained from resistant patients were sensitive to DHEA metabolites (Table).

	ED_{50} (μM)	
DHEA metabolite	**Resistant patient**	**Sensitive patient**
ADL	129.6	59.3
nADL	61.9	26.4
β-thiol (the most active DHEA metabolite)	49.7	40.8

The data show that DHEA metabolites reveal high anti-proliferative activity against human PBL including the cells isolated from steroid resistant asthmatic patients. Anti-proliferative activities of nADL and β-thiol (the

most active but unstable DHEA metabolite) were comparable. It has been noted that nanophorm of the hormone demonstrated higher activity than natural metabolite. Such effect may be explained by the greater bioavailability of nADL. References: 1. Wenzel et al. Allergy Asthma Proc. 2010; 31:461-471.