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J.D. 600001 Silva johnatasdutra@gmail.com [1], B. 600002 Paredes [2], I.M. 600003 Araújo [1], M.L. 600004 Pacheco [3], M.V. 600005 Oliveira [1], G. 600006 Suhett [2], L. 600007 Faccioli [2], E.F. 600008 Assis [4], H.C.C. 600009 Faria-Neto [4], R. 600010 Goldenberg [2], A.C. 600011 Carvalho [2], M.M. 600012 Morales [3], P. 600013 Pelosi [5], D.G. 600014 Xisto [1,3] and P.R.M. 600015 Rocco [1]. [1] LIP, UFRJ, Rio de Janeiro, Brazil ; [2] LCMC, UFRJ, Rio de Janeiro, Brazil ; [3] LFCM, UFRJ, Rio de Janeiro, Brazil ; [4] LI, FIOCRUZ, Rio de Janeiro, Brazil and [5] DSSID, University of Genoa, Genoa, Italy .

Body: We aimed to investigate the effects of BMDMC from healthy and ALI donors in experimental model of ALI. For this, 55 female C57BL/6 mice were randomly assigned into four groups. The control groups received saline. ALI mice received E.coli LPS intratracheally (ALIp) or intraperitoneally (ALIexp). After 24h, 5x106 whole BMDMC from all groups were subjected to in vitro colony forming units-fibroblastoid (CFU-F) and flow cytometry. After cell characterization, all animals were treated with saline or BMDMC (i.v.) obtained from healthy and ALIp and ALIexp donors at 24h. In ALIp, CFU-F assay showed a predominance of non-stromal cells over fibroblastoid colony. In ALIexp, an irregular CFU-F morphology was observed. In ALIp, monocytes and T lymphocytes were increased and hematopoietic precursor cells reduced. At day 7, mortality rate was higher in ALI groups, and after BMDMC therapy reduced. BMDMCs attenuated lung mechanics, neutrophils, alveolar collapse, as well as fibers content. Additionally, reduced the levels of citokynes in lung tissue independent of cell origin. BMDMCs reduced the inflammatory and fibrogenic processes, improving lung mechanics; nevertheless, BMDMCs from ALI animals were less effective at reducing the inflammatory process compared to those originated from healthy donors.