

**Additional file 4:** Concentrations of cytokines in asthmatic patients according to their viral status at exacerbation. Cytokines concentrations were measured during exacerbation or at steady state in plasma, sputum fluids and supernatants of MNC stimulated with Poly(I:C), Gardiquimod, lipopoly(I:C) or not (Medium). Patients infected by virus (V+) or not infected (V-) during the exacerbation were compared. Results are expressed as pg/ml [median with interquartile range (IQR)]. ND: not detectable, NE: Not evaluated.

\*: indicates a statistical significance between the 2 groups ( $p < 0.05$ ). <sup>1,2,3</sup> indicate an absolute standardized difference greater than 0.2, 0.5 and 0.8 respectively

	Exacerbation	Serum		Sputum		MNC Medium		MNC P(I:C)		MNC Gardiquimod		MNC Lipopoly(I:C)	
		V-	V+	V-	V+	V-	V+	V-	V+	V-	V+	V-	V+
CXCL8	<b>Median</b> [IQR]	ND [IQR]	ND [IQR]	1494 [627-5078]	2725 <sup>1</sup> [954-7685]	2384 [620-10672]	2407 [509-3332]	5180 [1472-13355]	2325 [1560-28034]	33418 [5563-51628]	31516 [2110-63756]	4106 [1967-20323]	4145 [1650-17323]
IFN-β	<b>Median</b> [IQR]	33 [21-93]	37 [21-91]	5 [5-19]	16 <sup>1</sup> [5-23]	17 [5-30]	5 <sup>1</sup> [5-20]	5 [5-27]	5 <sup>1</sup> [5-20]	5 [5-20]	5 [5-19]	NE	NE
IFN-γ	<b>Median</b> [IQR]	352 [108-725]	362 [86-935]	2 [1-37]	2 <sup>1</sup> [2-61]	2 [2-38]	2 [2-25]	78 [24-199]	80 [22-181]	60 [2-353]	44 [14-229]	216 [34-741]	69 <sup>1</sup> [42-169]
IL-1β	<b>Median</b> [IQR]	2 [2-14]	2 [2-78]	45 [2-160]	37 [2-60]	2 [2-10]	15 * <sup>1</sup> [2-52]	4 [2-31]	2 [2-49]	86 [9-219]	221 * <sup>1</sup> [35-878]	14 [2-111]	2 <sup>1</sup> [2-64]
IL-22	<b>Median</b> [IQR]	117 [67-171]	93 <sup>1</sup> [31-161]	119 [6-416]	98 [5-316]	2 [47-182]	54 <sup>1</sup> [10-98]	105 [38-256]	79 <sup>1</sup> [10-103]	125 [83-174]	70 * <sup>2</sup> [15-106]	110 [71-150]	70 <sup>1</sup> [23-114]
IL-29	<b>Median</b> [IQR]	640 [388-1181]	614 [253-1141]	5 [5-47]	7 [5-36]	7 [5-18]	19 <sup>1</sup> [5-35]	5 [5-24]	12 <sup>1</sup> [5-36]	5 [5-23]	10 * <sup>1</sup> [5-37]	12 [5-40]	12 [5-27]
IL-5	<b>Median</b> [IQR]	41 [15-74]	40 [6-85]	13 [2-61]	57 * <sup>1</sup> [4-215]	2 [2-3]	2 <sup>1</sup> [2-17]	2 [2-6]	7 <sup>2</sup> [2-36]	2 [2-14]	10 * <sup>1</sup> [2-24]	4 [2-16]	3 [2-24]
IL-6	<b>Median</b> [IQR]	2 [2-13]	2 [2-16]	25 [5-35]	21 <sup>1</sup> [2-86]	16 [2-229]	66 [2-246]	179 [37-342]	169 [41-380]	2463 [431-4949]	1130 [450-6573]	318 [72-870]	292 [37-960]
	<b>Steady State</b>	Serum		Sputum		MNC Medium		MNC P(I:C)		MNC Gardiquimod		MNC Lipopoly(I:C)	
		V-	V+	V-	V+	V-	V+	V-	V+	V-	V+	V-	V+
CXCL8	<b>Median</b> [IQR]	ND [IQR]	ND [IQR]	761 [239-2512]	135 <sup>2</sup> [2-828]	3823 [899-24635]	5425 [835-24814]	4539 [605-20981]	11521 <sup>1</sup> [1132-45332]	20952 [8538-41209]	19084 [10626-32515]	5880 [2932-16074]	10358 [2330-17301]
IFN-β	<b>Median</b> [IQR]	44 [21-84]	39 [5-143]	5 [5-31]	5 [5-22]	5 [5-21]	5 <sup>1</sup> [5-18]	5 [5-19]	7 [5-18]	5 [5-20]	5 [5-21]	NE	NE
IFN-γ	<b>Median</b> [IQR]	320 [113-806]	148 <sup>1</sup> [47-756]	2 [2-31]	2 [2-10]	38 [6-88]	41 [2-214]	92 [34-437]	343 * <sup>1</sup> [48-6664]	603 [130-4230]	611 <sup>1</sup> [313-9901]	771 [112-9958]	3605 [314-11002]
IL-1β	<b>Median</b> [IQR]	2 [2-24]	10 <sup>1</sup> [2-67]	7 [2-206]	45 [2-208]	19 [2-60]	51 * <sup>1</sup> [5-119]	28 [2-63]	60 * <sup>2</sup> [15-243]	297 [160-503]	315 <sup>1</sup> [188-1353]	53 [24-190]	71 [17-285]
IL-22	<b>Median</b> [IQR]	142 [87-175]	95 * <sup>2</sup> [17-144]	96 [8-686]	23 <sup>1</sup> [5-542]	148 [65-262]	121 [80-154]	137 [94-201]	119 <sup>1</sup> [66-228]	109 [71-202]	108 [65-172]	117 [78-160]	113 [84-155]
IL-29	<b>Median</b> [IQR]	782 [441-1026]	717 [292-1361]	104 [10-198]	49 [10-172]	19 [10-36]	33 <sup>1</sup> [10-52]	20 [10-49]	29 [10-81]	10 [10-27]	26 * <sup>2</sup> [10-39]	20 [10-63]	10 [10-57]
IL-5	<b>Median</b> [IQR]	30 [24-69]	36 [10-96]	3 [1-41]	31 * <sup>2</sup> [14-279]	1 [1-11]	13 * <sup>2</sup> [1-42]	1 [1-14]	5 <sup>1</sup> [1-41]	1 [1-29]	14 <sup>1</sup> [1-48]	1 [1-19]	2 [1-17]
IL-6	<b>Median</b> [IQR]	2 [1-5]	2 [1-2]	8 [1-14]	2 <sup>1</sup> [1-2]	153 [8-668]	377 [8-714]	404 [88-1723]	796 * <sup>1</sup> [257-2652]	5574 [3393-6893]	3557 <sup>1</sup> [1103-7081]	986 [121-2520]	728 [346-2945]