

M06: Spleen Immunophenotyping

Study Number: I99067

DTTID: 103-002-003-000-9

Study Type: immune screening

Species/Strain: Rat/Harlan Sprague Dawley

Test Compound: Echinacea purpurea extract

CAS Number: 90028-20-9

DTXSID: DTXSID0031265

Date: 06 Jun 2025

Time: 10:51:37 AM

Females: NK/Pheno

	Treatment Groups						
	0 mg/kg	125 mg/kg	250 mg/kg	500 mg/kg	1000 mg/kg	2000 mg/kg	15 mg/kg CPS
Spleen Cells (x10 ⁶)	287.20 ± 46.33[12]	228.82 ± 22.17[12]	280.20 ± 35.48[11]	318.05 ± 47.21[12]	276.22 ± 38.51[12]	262.07 ± 25.79[12]	129.98 ± 23.03[8]*
Absolute counts							
Total Lymphocytes	284.294 ± 45.897[12]	225.896 ± 21.783[12]	277.508 ± 35.197[11]	315.091 ± 46.731[12]	272.766 ± 38.230[12]	256.951 ± 25.017[12]	128.848 ± 22.727[8]*
Total T Cells	127.680 ± 22.361[12]	108.320 ± 15.385[12]	122.859 ± 13.593[11]	143.051 ± 19.584[12]	136.391 ± 23.658[12]	114.876 ± 12.347[12]	67.158 ± 9.816[8]*
CD4 ⁺ T Cells ^a	62.709 ± 6.326[11]	63.953 ± 9.554[12]	69.615 ± 7.503[11]	79.905 ± 10.055[12]	76.256 ± 12.189[12]	66.360 ± 7.189[12]	35.922 ± 6.096[8]*
CD8 ⁺ T Cells ^b	47.531 ± 8.676[12]	39.208 ± 5.931[12]	46.572 ± 5.875[11]	55.473 ± 8.900[12]	53.400 ± 10.407[12]	41.789 ± 5.193[12]	27.626 ± 3.753[8]
B Cells	123.613 ± 26.355[12]	89.138 ± 12.735[12]	121.266 ± 23.673[11]	136.120 ± 24.478[12]	99.657 ± 14.920[12]	106.388 ± 18.772[12]	40.716 ± 9.836[8]*
NK Cells	12.473 ± 2.533[12]	10.685 ± 1.040[12]	12.529 ± 1.367[11]	13.808 ± 2.081[12]	12.237 ± 2.462[12]	13.309 ± 1.470[12]	6.639 ± 0.815[8]
Mono/Mac Cells ^c	6.473 ± 1.157[12]	5.481 ± 0.719[12]	6.602 ± 0.962[11]	7.404 ± 1.376[12]	6.481 ± 0.940[12]	7.750 ± 1.104[12]	3.018 ± 0.707[8]*
Neutrophils	3.802 ± 0.573[12]	3.601 ± 0.417[12]	3.775 ± 0.519[11]	4.058 ± 0.633[12]	3.401 ± 0.498[12]	3.525 ± 0.386[12]	1.463 ± 0.133[8]**
Eosinophils	0.390 ± 0.033[11]	0.508 ± 0.122[12]	0.416 ± 0.105[11]	0.556 ± 0.102[12]	0.552 ± 0.140[12]	0.498 ± 0.057[12]	0.240 ± 0.057[8]*
Total T Cells: B Cells Ratio	1.655 ± 0.370[12]	1.697 ± 0.349[12]	1.658 ± 0.390[11]	1.215 ± 0.125[12]	1.580 ± 0.264[12]	1.599 ± 0.332[12]	2.069 ± 0.353[8]
CD4 ⁺ T Cells: CD8 ⁺ T Cells Ratio	1.615 ± 0.080[12]	1.676 ± 0.125[12]	1.597 ± 0.143[11]	1.623 ± 0.157[12]	1.590 ± 0.133[12]	1.686 ± 0.149[12]	1.296 ± 0.121[8]*
Relative counts							
Percent Total Lymphocytes (%)	98.960 ± 0.109[12]	98.763 ± 0.135[12]	98.989 ± 0.125[11]	99.115 ± 0.063[12]	98.619 ± 0.369[12]	98.153 ± 0.292[12]	99.220 ± 0.110[8]
Percent Total T Cells (%)	48.530 ± 4.043[12]	48.041 ± 4.361[12]	47.885 ± 4.094[11]	47.079 ± 2.158[12]	49.274 ± 3.190[12]	46.529 ± 3.979[12]	54.174 ± 3.000[8]
Percent CD4 ⁺ T Cells (%)	58.438 ± 1.077[12]	58.681 ± 1.526[12]	57.222 ± 1.882[11]	57.350 ± 1.788[12]	57.448 ± 1.574[12]	57.949 ± 1.987[12]	52.689 ± 1.981[8]*
Percent CD8 ⁺ T Cells (%)	36.743 ± 1.016[12]	36.264 ± 1.538[12]	37.429 ± 1.815[11]	37.288 ± 1.866[12]	37.580 ± 1.598[12]	36.151 ± 1.847[12]	41.978 ± 2.034[8]*
Percent B Cells (%)	39.640 ± 4.407[12]	39.203 ± 4.945[12]	39.609 ± 4.720[11]	41.488 ± 2.458[12]	37.872 ± 3.704[12]	39.353 ± 4.642[12]	29.589 ± 2.864[8]
Percent NK Cells (%)	4.470 ± 0.365[12]	4.859 ± 0.276[12]	4.685 ± 0.170[11]	4.542 ± 0.201[12]	4.410 ± 0.407[12]	5.200 ± 0.276[12]	5.568 ± 0.475[8]
Percent Mono/Mac Cells (%)	2.219 ± 0.103[12]	2.353 ± 0.131[12]	2.308 ± 0.136[11]	2.198 ± 0.139[12]	2.397 ± 0.160[12]	2.892 ± 0.251[12]	2.243 ± 0.202[8]
Percent Neutrophils (%)	1.417 ± 0.106[12]	1.551 ± 0.073[12]	1.364 ± 0.087[11]	1.272 ± 0.047[12]	1.259 ± 0.115[12]	1.348 ± 0.065[12]	1.305 ± 0.166[8]
Percent Eosinophils (%)	0.209 ± 0.035[12]	0.224 ± 0.041[12]	0.187 ± 0.046[11]	0.200 ± 0.034[12]	0.202 ± 0.038[12]	0.215 ± 0.035[12]	0.268 ± 0.100[8]

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LEGEND

Data are displayed as mean \pm SEM (N) unless otherwise noted.

All units are $\times 10^6$ /spleen unless otherwise noted.

Statistical analysis performed by Jonckheere (trend) and Shirley or Dunn (pairwise) tests. The positive control group (15 mg/kg CPS) was excluded from trend test.

Statistical analysis for the positive control group (15 mg/kg CPS) compared to the vehicle control group was performed using the Wilcoxon rank sum test.

Statistical significance for the control group indicates a significant trend test.

Statistical significance for a treatment group indicates a significant pairwise test compared to the vehicle control group.

* Statistically significant at $p \leq 0.05$

** Statistically significant at $p \leq 0.01$

^aCD4⁺ T Cells = Helper/DTH - T Cell

^bCD8⁺ T Cells = Cytotoxic T Cell

^cMono/Mac Cells = Monocytes/Macrophage

SRBC = Sheep Red Blood Cells

SD = Study Day

SEM = Standard Error of the Mean

CPS = Cyclophosphamide

Females from the vehicle control and treatment groups were removed on SD 28.

** END OF REPORT **