

# Hodnocení výsledků KO

Bourková L., OKH FN Brno

# Obecná pravidla pro měření

- pravidelná kontrola KO i dif
  - kontrola správnosti (firemní materiál)
  - kontrola přesnosti (vitální krev)
  - porovnatelnost (metodik, přístrojů, laboratoří.....)
  - správná údržba přístroje (kontroly po údržbě)
- 

❖ vždy statistické vyhodnocení: CV%, SD, Mean

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- *kontrola správného odběru EDTA (evt.  $Mg^{2+}$  nebo citrát)*

*Pozor na: stáří vzorku, vzhled vzorku - chilózní, ikterický...*

# Obecná pravidla pro hodnocení

- specifická pravidla pro daný analyzátor:
  - princip měření
  - rozsah hodnot měřených parametrů (linearita)
  - hlášení přístroje
  - měřený / počítaný parametr, grafy
- klinická hlediska:
  - diagnóza
  - léčba
  - historie pacienta (LIS, četnost měření)

# Fyziologické hodnoty

# Infekce

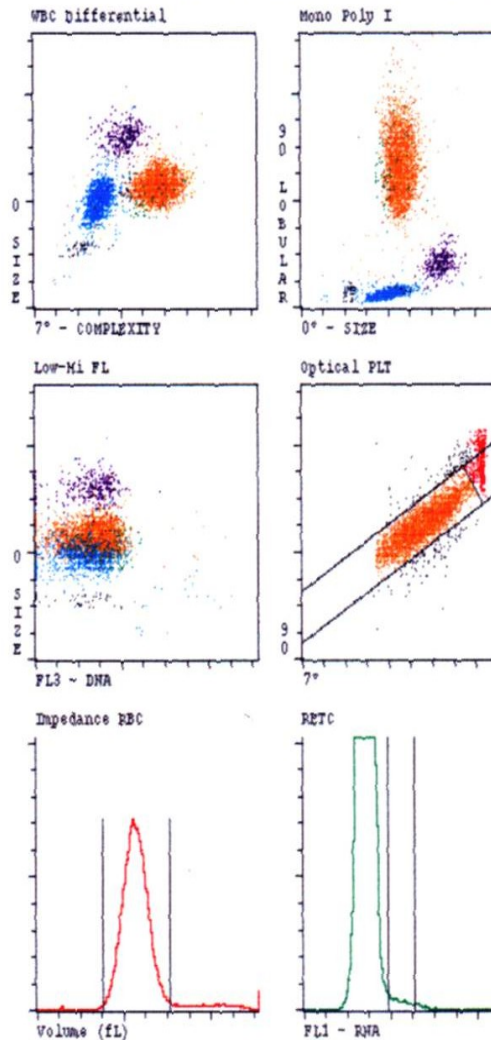
Sequence #: 703 Autoloader r38t06  
 Patient/Human  
 Specimen ID: 020003255  
 Name:

Test Selection: CBC+RETC  
 Param Set(Chart Page): 1  
 Limit Set: 1  
 Run Date/Time: 04.10.99 13:34

X-B	WBC	RBC	PLT	RETC
In	In	In	In	In
WBC	7.88	10e9/L	WVF	.992
SEG	4.73	%S		60.1
BAND	0.00	%BD		0.00
IG	0.00	%IG		0.00
BLST	0.00	%BL		0.00
MONe	.483	%Me		6.12
EOS	.186	%E		2.37
BASO	.051	%B		0.641
LYMe	2.43	%Le		30.8
VARL	0.00	%VL		0.00

RBC	5.22	10e12/L	RBCo	5.12
HGB	9.38	mmol/L		
HCT	49.0	%		
MCV	93.9	fL		
MCH	1.80	fmg1		
MCHC	19.2	mmol/L		
RDW	12.4	%CV		
RETC	71.7	10e9/L	%R	1.38
IRF	.221			
NRBC	0.00	10e9/L	NR/W	0.00

PLTo	229.	10e9/L	PLTi	239.
MPV	9.59	fL	CD61	----
PDW	16.7	10(GSD)	PLTs	----
PCT	2.19	mL/L	PLT1	----



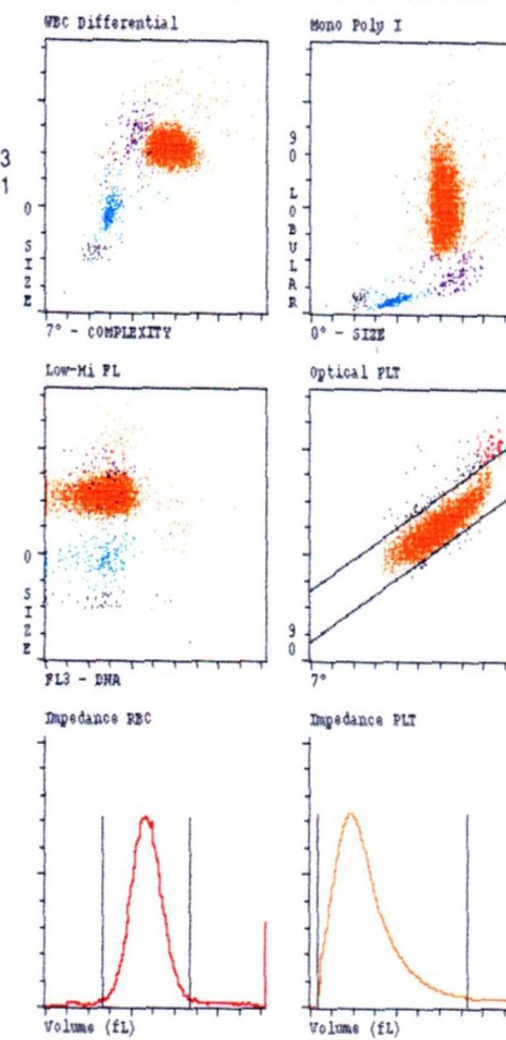
Sequence #: 7967 Autoloader r04t02  
 Patient/Human  
 Specimen ID: 031273  
 Name:

Test Selection: CBC  
 Param Set(Chart Page): 1  
 Limit Set: 1  
 Run Date/Time: 30.04.99 08:58

X-B	WBC	RBC	PLT	RETC
In	1 Out	In	In	In
WBC	31.0	10e9/L	WVF	.990
SEG	17.8	%S		57.5
BAND	9.14	%BD		29.5
IG	2.06	%IG		6.65
BLST	0.00	%BL		0.00
MONe	.637	%Me		2.06
EOS	.043	%E		.139
BASO	0.00	%B		0.00
LYMe	1.29	%Le		4.16
VARL	0.00	%VL		0.00

RBC	3.39	10e12/L	RBCo	3.45
HGB	6.49	mmol/L		
HCT	33.2	%		
MCV	98.0	fL		
MCH	1.91	fmg1		
MCHC	19.5	mmol/L		
RDW	15.3	%CV		
RETC	----	10e9/L	%R	----
IRF	----			
NRBC	0.00	10e3/uL	NR/W	0.00

PLTo	305.	10e9/L	PLTi	305.
MPV	9.00	fL		
PDW	14.7	10(GSD)		
PCT	2.74	mL/L		



# Starý vzorek

sequence #: 1448 Autoloader r93t08  
 specimen Type/SubType: Patient/Human  
 specimen ID: JJ5312  
 name:

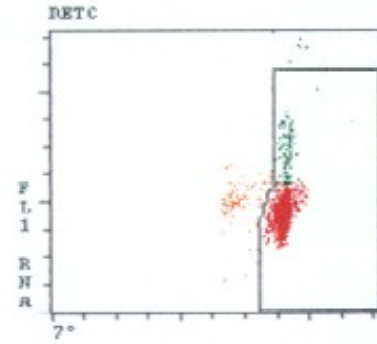
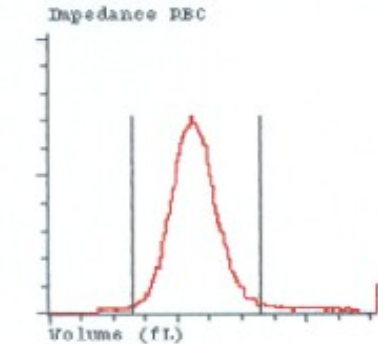
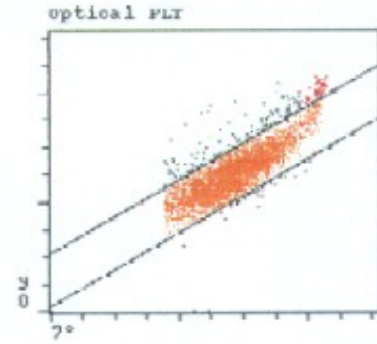
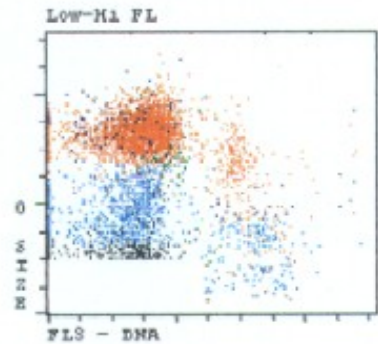
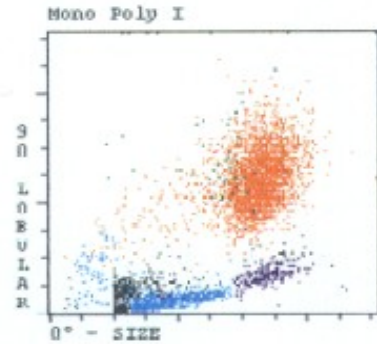
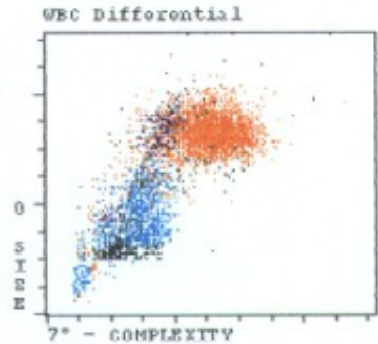
Test Selection: CBC+RETC  
 Param Set(Chart Page): 1  
 Limit Set: 1  
 Run Date/Time: 28/10/98 17:16

BC	8.30	10e3/uL	WVF	.890	nvWBC	
EG	3.39		%S	40.8		
AND	2.11		%BD	25.4	BAND	.55
G	.551		%IG	6.64	IG	.69
LST	0.00		%BL	0.00		
ONE	.489		%Me	5.89		
OS	.105		%E	1.26		
ASO	.017		%B	.204		
YMe	1.65		%Le	19.8		
ARL	0.00		%VL	0.00		

BC	3.19	10e6/uL	RBCc	3.34
GB	9.82	g/dL		
CT	30.3	%		
ICV	95.0	fL		
ICH	30.8	pg		
ICHC	32.4	g/dL		
DW	15.6	%		
ETC	60.6s	10e3/uL	%R	1.90s
RF	.490			IR
RBC	0.00	10e3/uL	NR/W	0.00

PLT	361.	10e3/uL	PLTi	329.
MPV	10.9	fL		
PDW	15.3	10(GSD)		
PCT	.395	%		

Manual Differential	RBC Morphology		
EG	META	NORMAL	MICRO
AND	MYELO	POLYCH	MACRO
MPH	PRO	HYPOCH	ANISO
ENO	BLAST	POIK	BASOSTIP
OSIN	VAR LYM	TARGET	
ASO	TOXGRAN	SPHERO	NRBC



# Satelitózta trombocytú

Sequence #: 9427 Open Tube  
 Specimen Type/SubType: Patient/Human  
 Specimen ID: gruyters  
 Name:

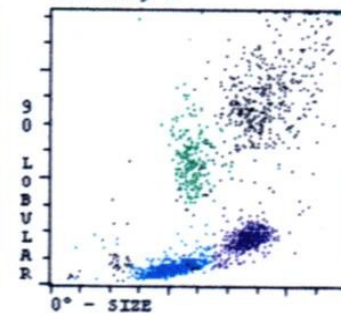
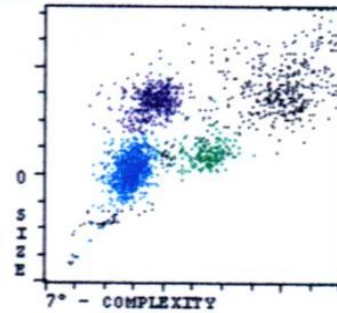
Test Selection: CBC  
 Param Set(Chart Page): 1  
 Limit Set: 1  
 Run Date/Time: 26/01/99 17:44

WBC 3.20\*10e9/L WVF .954\*  
 NEU 0.00\* %N 0.00\*  
 LYM 2.00\* %L 62.6\*  
 MONO .663\* %M 20.7\*  
 EOS .512\* %E 16.0\*  
 BASO .023\* %B .732\*

\*InvalidData

WBC Differential

Mono Poly I

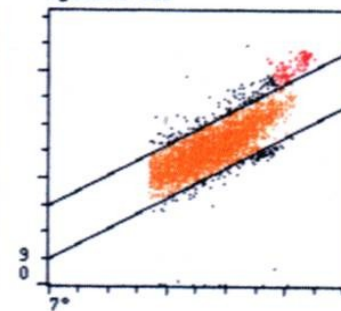
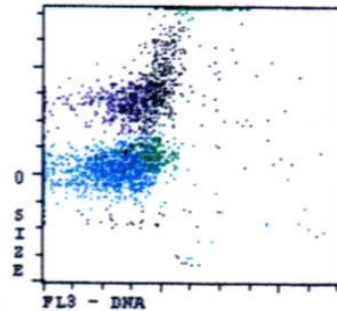


VARLYM .50

RBC 5.00 10e12/L RBCo 4.84  
 HGB 9.50 mmol/L  
 HCT .455 L/L  
 MCV 91.0 fL  
 MCH 1.90 fmoI  
 MCHC 20.9 mmol/L  
 RDW 12.4 %CV  
 RETC --- 10e9/L %R ---  
 IRF ---  
 NRBC 0.00\*10e9/L NR/W 0.00\*  
 PLT 156. 10e9/L PLTi 162.  
 MPV 8.48 fL  
 PDW 16.9 10(GSD)  
 PCT 1.32 mL/L

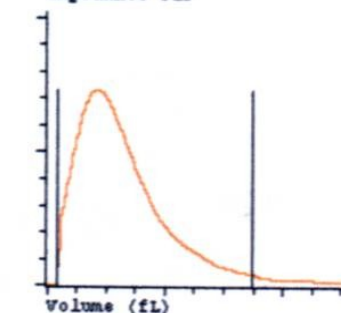
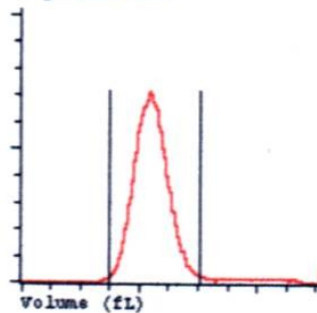
Low-Mi FL

Optical PLT

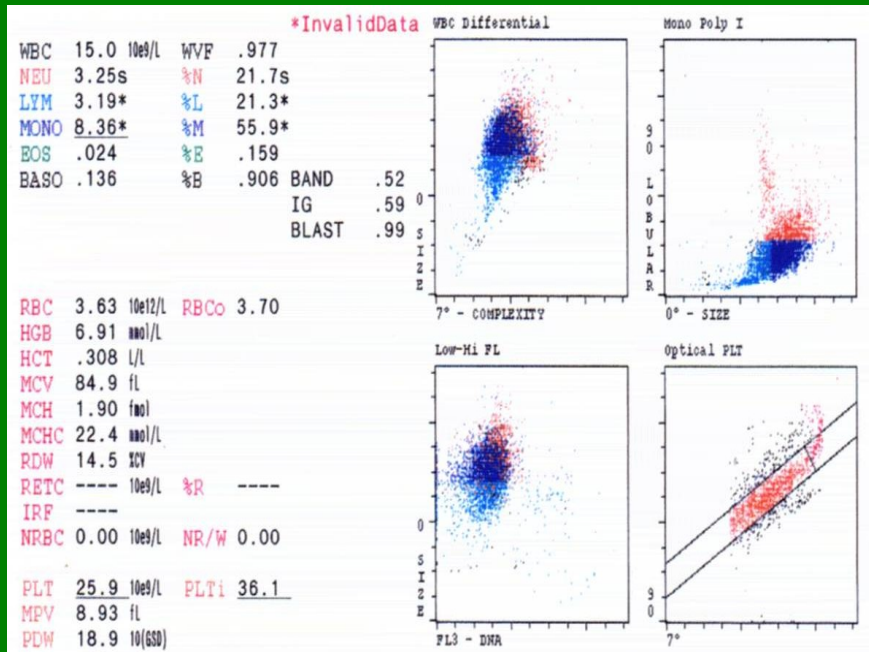


Impedance RBC

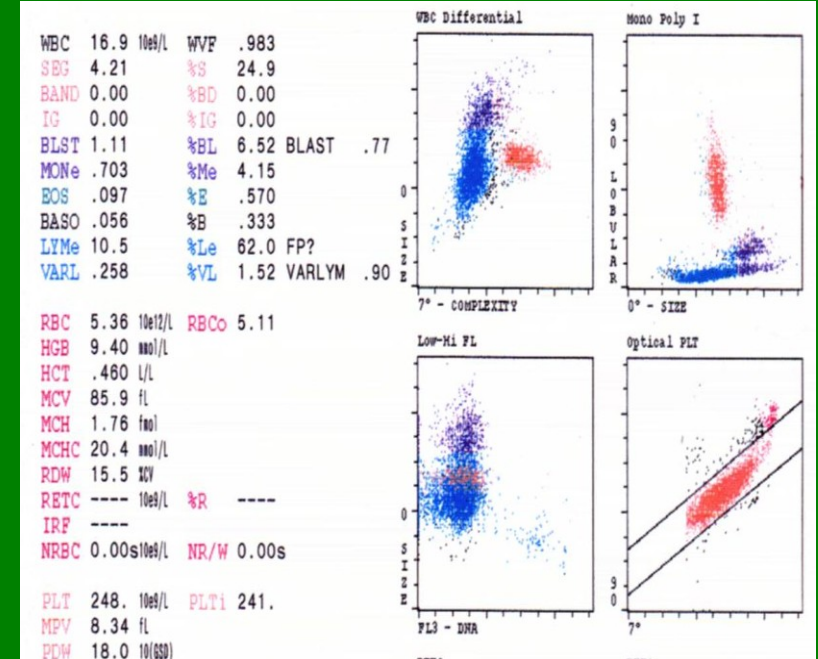
Impedance PLT



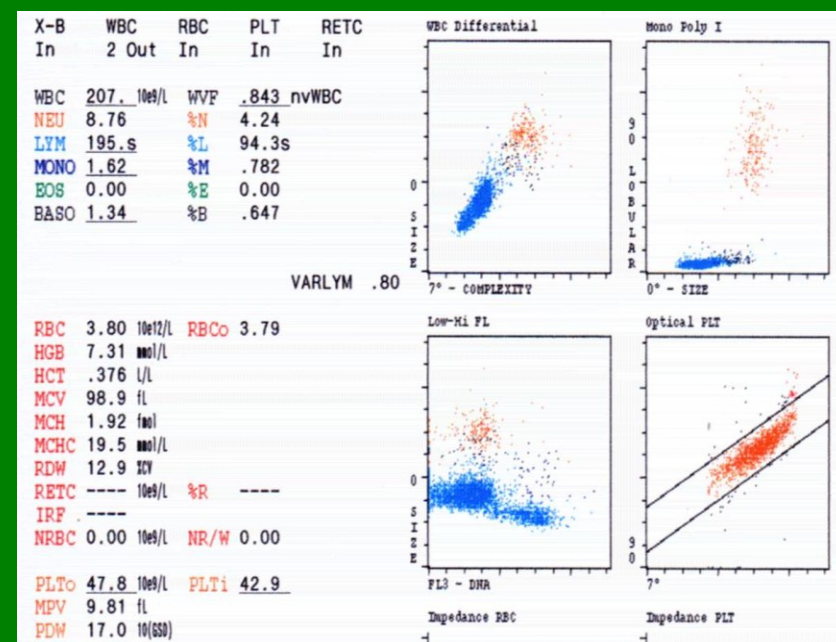
# Monocytární leukémie



# Mononukleóza



# Chronická lymfatická leukémie



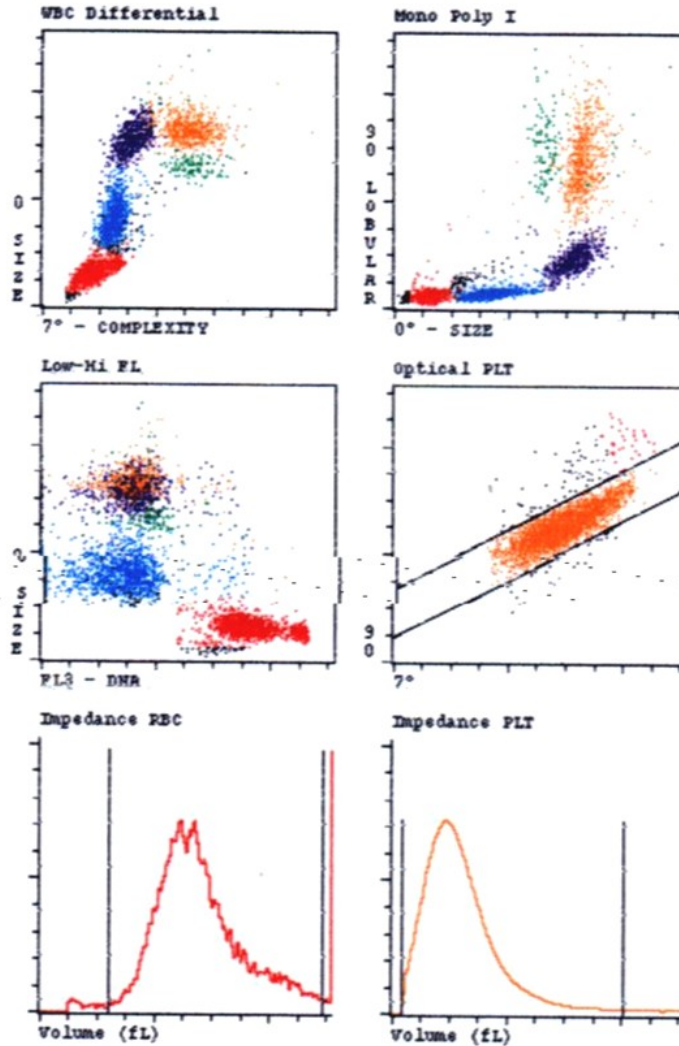
# NRBC ve vzorku

Sequence #: 7677 Open Tube  
 Patient/Human  
 Specimen ID: 990812880018  
 Name:

Test Selection: CBC+R  
 Param Set(Chart Page): 1  
 Limit Set: 1  
 Run Date/Time: 22/08/99 20:54

X-B In	WBC In	RBC In	PLT In	RETC In
WBC	7.73 10e9/L	WVF	.957	
NEU	1.86	%N	24.1	
LYM	3.74	%L	48.4	
MONO	1.78	%M	23.1	
EOS	.326	%E	4.22	
BASO	.020	%B	.258	

RBC	1.22s10e12/L	RBCo	1.28
HGB	3.23 mmol/L		
HCT	.141sl/L		ASYM
MCV	115.sfl		
MCH	2.65sfmol		
MCHC	23.0smmol/L		
RDW	26.5s%CV		
RETC	----- 10e9/L	%R	-----
IRF			
NRBC	5.07 10e9/L	NR/W	65.6
PLTo	290. 10e9/L	PLTi	285.
MPV	8.31 fl		
PDW	14.6 10(GSD)		
PCT	2.41 mL/L		





# Vzorek po dialýze

Sequence #: 4453 AutoLoader r91t07  
 Patient/Human  
 Specimen ID: JX6223  
 Name:

Test Selection: CBC+RETC  
 Param Set(Chart Page): 1  
 Limit Set: 1  
 Run Date/Time: 29/06/00 12:08

X-B In	WBC In	RBC -	PLT In	RETC In
WBC	15.0*10e9/L	WVF	.990*	
NEU	5.78*	%N	38.5*	
LYM	9.00*	%L	59.9*	
MONO	.214*	%M	1.43*	
EOS	.022*	%E	.149*	
BASO	0.00*	%B	0.00*	

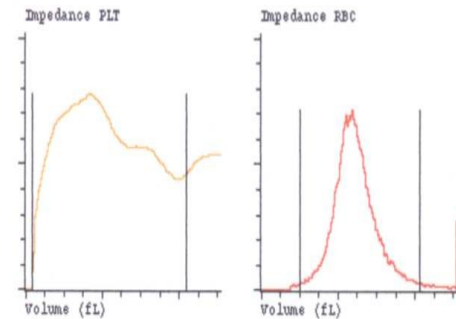
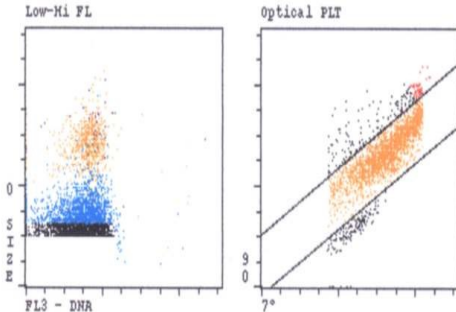
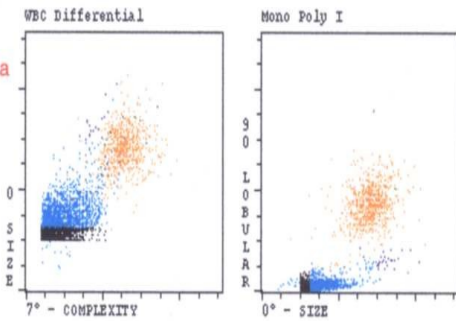
VARLYM .60

RBC	3.78s10e12/L	RBCc	3.85
HGB	8.08 mmol/L		rstRBC
HCT	.395 L/L		
MCV	104. fL		
MCH	2.13 fmoI		
MCHC	20.5 mmol/L		
RDW	21.9 %CV		
RETC	95.3s10e9/L	%R	2.52s
IRF	.335		IR
NRBC	0.00*10e9/L	NR/W	0.00*

PLTc	76.9 10e9/L	PLTf	90.3
MPV	16.6*fL	CD61	----
PDW	39.8*10(GSD)	PLTs	----
PCT	1.28*%L	PLTf	----

Manual Differential	'RBC Morphology		
SEG	'META	'NORMAL	'MICRO
BAND	'WYELD	'POLYCH	'MACRO
LYMPH	'PRO	'HYPOCH	'ANISO
MONO	'BLAST	'POIK	'BASOSTIP
EOSIN	'VAR LYW	'TARGET	
BASO	'TOXGRAN	'SPHERO	'NRBC
PLT_EST	'PLT MORPH		

Comment:  
 DIFF by: Date:



WBC Count Rate Violation  
 Resistant RBC Interference with WBC results  
 Unable to Find Clear Separation Between WBC Subpopulations  
 Lower, Upper, or Lower and Upper Region Interference in PLTf Histogram  
 Lower, Upper, or Lower and Upper Region Interference in PLTf Histogram

# Po odstranění rstRBC

Sequence #: 4472 AutoLoader r94t09  
 Patient/Human  
 Specimen ID: JX6223  
 Name:

Test Selection: CBC+R  
 Param Set(Chart Page): 1  
 Limit Set: 1  
 Run Date/Time: 29/06/00 12:56

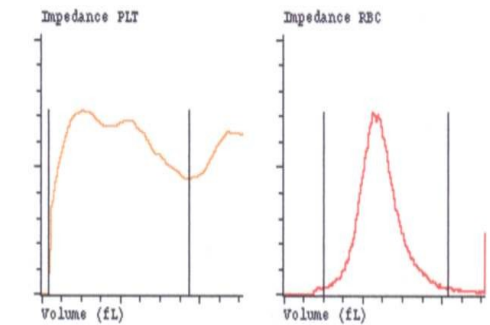
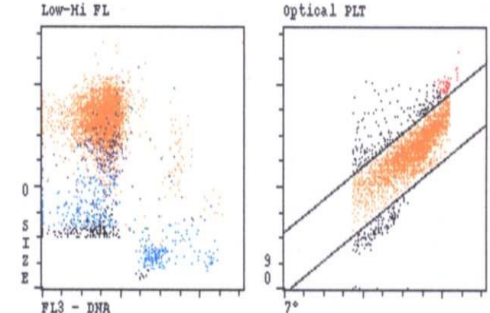
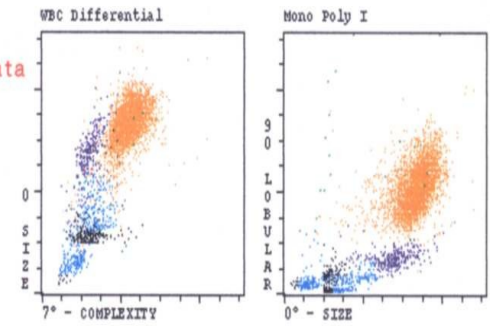
X-B In	WBC In	RBC -	PLT In	RETC In
WBC	6.47 10e9/L	WVF	.945	
NEU	5.55	%N	85.7	
LYM	.531	%L	8.21 FP?	
MONO	.364	%M	5.63	
EOS	.028	%E	.437	
BASO	.001	%B	.015	

RBC	3.74 10e12/L	RBCc	3.78
HGB	7.96 mmol/L		
HCT	.388 L/L		
MCV	104. fL		
MCH	2.13 fmoI		
MCHC	20.5 mmol/L		
RDW	21.9 %CV		
RETC	----- 10e9/L	%R	----
IRF	----		
NRBC	0.00s10e9/L	NR/W	0.00s

PLTc	75.2 10e9/L	PLTf	81.3
MPV	13.2*fL	CD61	----
PDW	19.7*10(GSD)	PLTs	----
PCT	.992*%L	PLTf	----

Manual Differential	'RBC Morphology		
SEG	'META	'NORMAL	'MICRO
BAND	'WYELD	'POLYCH	'MACRO
LYMPH	'PRO	'HYPOCH	'ANISO
MONO	'BLAST	'POIK	'BASOSTIP
EOSIN	'VAR LYW	'TARGET	
BASO	'TOXGRAN	'SPHERO	'NRBC
PLT_EST	'PLT MORPH		

Comment:  
 DIFF by: Date:



Lower, Upper, or Lower and Upper Region Interference in PLTf Histogram  
 Lower, Upper, or Lower and Upper Region Interference in PLTf Histogram

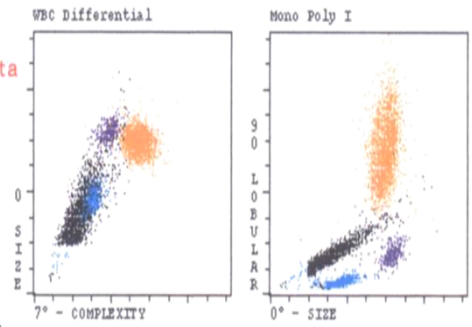
# Reakce na EDTA

Sequence #: 8950 Auto-loader r06t03  
 Patient/Human  
 Specimen ID: 030074152  
 Name: KATINKA JOHA PETERSEN

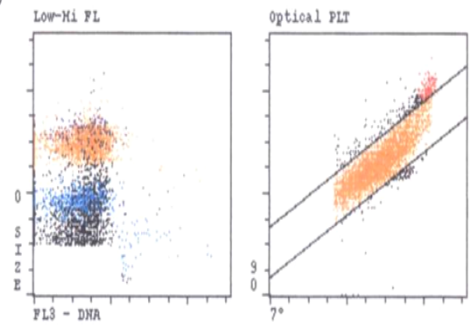
Test Selection: CBC  
 Param Set (Chart Page): 1  
 Limit Set: 1  
 Run Date/Time: 02.05.00 09:47

X-B In	WBC In	RBC In	PLT In	RETC In
WBC	14.8	10e9/L	WVF	.985
SEG	9.64	%S	%ED	64.9
BAND	0.00	%BD	%IG	0.00
IG	0.00	%IG	%BL	0.00*
BLST	0.00*	%BL	%Me	8.54*
MONe	1.27*	%Me	%E	.109
EOS	.016	%E	%B	.068
BASO	.010	%B	%Le	26.4*FP?
LYMe	3.92*	%Le	%VL	0.00*VARLYM .50
VARL	0.00*	%VL		

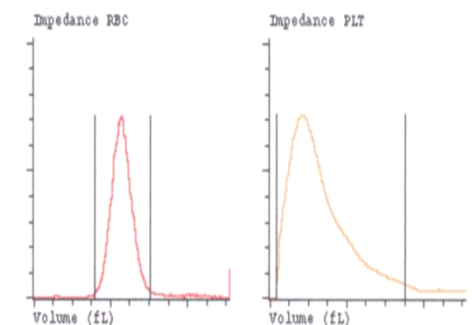
\*InvalidData



RBC	3.56	10e12/L	RBCo	3.59
HGB	7.09	mmol/L		
HCT	33.0	%		
MCV	92.8	fL		
MCH	1.99	fmol		
MCHC	21.5	mmol/L		
RDW	11.3	%CV		
RETC	----	10e9/L	%R	----
IRF	----			
NRBC	0.00s	10e9/L	NR/W	0.00s



PLTo	132.	*10e9/L	PLTi	140.*PltC1mp
MPV	8.99	*fL	CD61	----
PDW	15.2	*10(GSD)	PLTs	----
PCT	1.18	*mL/L	PLT1	----



Unable to Find Clear Separation Between WBC Subpopulations  
 Significant Number of Cells Removed from WBC Differential Analysis  
 Interference with PLT Results Due to PLT Clumping

Manual Differential	'RBC Morphology		
SEG	'META	'NORMAL	'MICRO
BAND	'MYELO	'POLYCH	'MACRO
LYMPH	'PRO	'HYPOCH	'ANISO
MONO	'BLAST	'POIK	'BASOSTIP
EOSIN	'VAR LYM	'TARGET	
BASO	'TOXGRAN	'SPHERO	'NRBC
PLT_EST		'PLT MORPH	

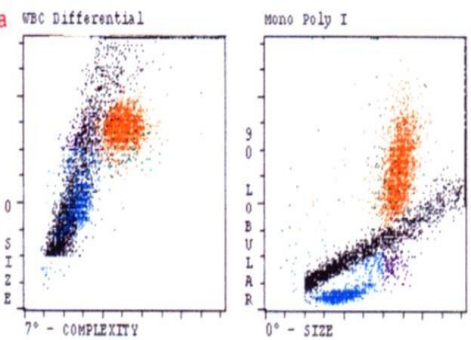
Comment:

Sequence #: 2568  
 Specimen Type/SubType: Patient/Human  
 Specimen ID: IA5285  
 Name:

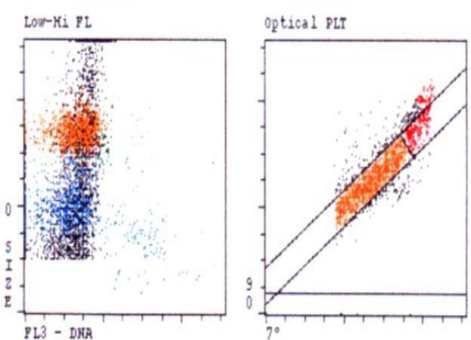
Test Selection: CBC+RETC  
 Param Set (from Chart Page): 1  
 Limit Set: 1  
 Run Date/Time: 22/01/97 12:17

Invalid Data

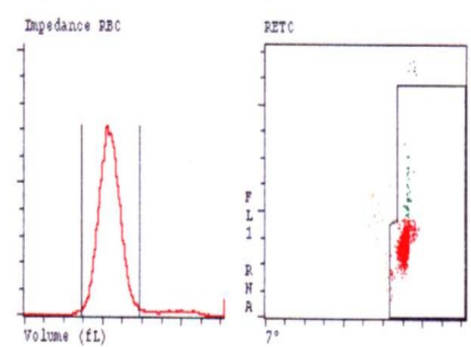
WBC	6.46	*10e9/L	WVF	.961*
NEU	4.14*	%N	%L	29.0*
LYM	1.87*	%L	%M	3.98*
MONO	.257*	%M	%E	2.93*
EOS	.189*	%E	%B	0.00*BAND .52
BASO	0.00*	%B		



RBC	5.19	10e12/L	RBCo	5.28
HGB	15.7	g/dL		
HCT	.454	L/L		
MCV	87.5	fL		
MCH	30.2	pg		
MCHC	34.6	g/dL		
RDW	12.1	%		
RETC	43.6	10e9/L	%R	.840
IRF	.232			
NRBC	0.00	*10e3/uL	NR/W	0.00*



PLT	45.2	*10e9/L	PLTi	49.6*PltC1mp
MPV	10.5	*fL		
PDW	16.8	*10(GSD)		
PCT	.476	*mL/L		



# ALL a fragmenty cytoplazmy

Sequence #: 2699 Autoloader r38t02  
 Patient/Human  
 Specimen ID: 000213479091  
 Name:

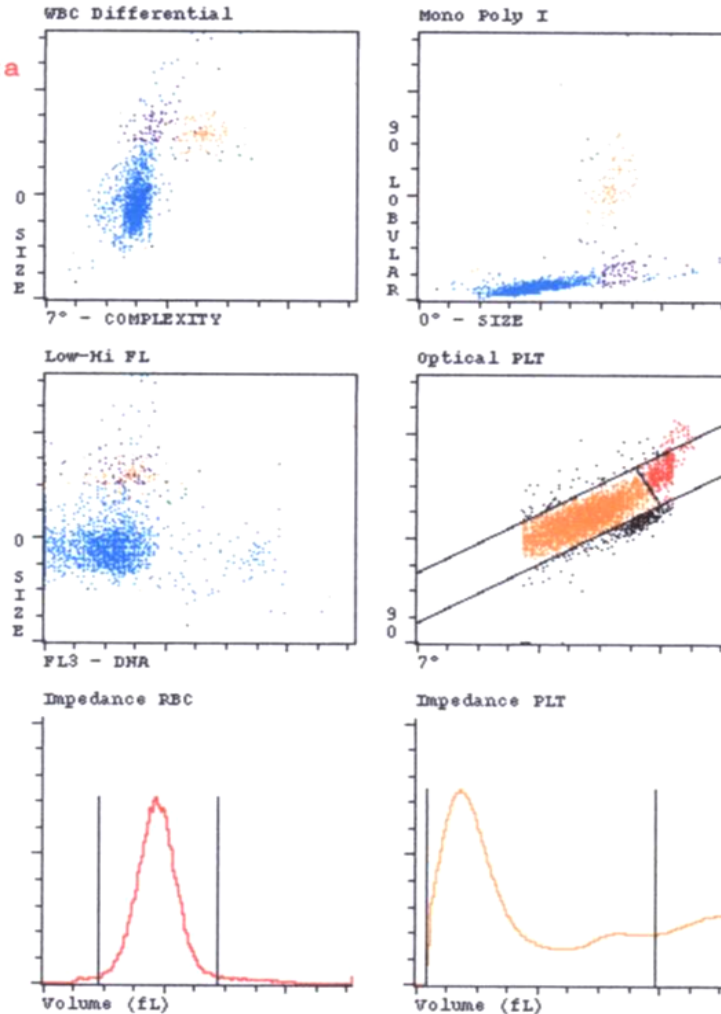
Test Selection: CBC  
 Param Set(Chart Page): 1  
 Limit Set: 1  
 Run Date/Time: 21/02/00 08:57

X-B In	WBC 2 Out	RBC In	PLT In	RETC In
WBC	3.36 10e9/L	WVF	.956	<b>*InvalidData</b>
NEU	.133	%N	3.95	
LYM	3.08s	%L	91.7s	
MONO	.136s	%M	4.05s	
EOS	.010	%E	.296	
BASO	0.00	%B	0.00	

BLAST .73  
 VARLYM .60

RBC	3.74 10e12/L	RBC <sub>o</sub>	3.78
HGB	5.81 mmol/L		
HCT	.287 L/L		
MCV	76.6 fl		
MCH	1.55 fmol		
MCHC	20.3 mmol/L		
RDW	17.9 %CV		
RETC	----- 10e9/L	%R	-----
IRF	-----		
NRBC	0.00 10e9/L	NR/W	0.00

PLT <sub>o</sub>	81.5*10e9/L	PLT <sub>i</sub>	131.*
MPV	5.41*fl	CD61	-----
PDW	15.1*10(GSD)	PLT <sub>s</sub>	-----
PCT	.441*ml/L	PLT <sub>l</sub>	-----



Lower, Upper, or Lower and Upper Region Interference in PLTi Histogram  
 PIC/POC Delta