Gel Barrier Stability in VACUETTE®
Serum Separator Tubes for LDH and Potassium

Background:

Greiner Bio-One, Austria has sold plastic evacuated tubes (VACUETTE®) for venous blood collection since 1986. VACUETTE® Serum Separator tubes incorporate an inert gel material into the blood collection tube.

The gel has a controlled viscosity and a specific gravity intermediate to serum and clot. During centrifugation, the gel material forms an impermeable barrier between the serum and clot separating the serum from fibrin and cells.

The parameters analysed in this study are chosen because they are known to be influenced by the presence of blood cells (erythrocytes, granulocytes, or thrombocytes). The tubes should be centrifuged within two hours after blood collection to avoid extended contact between plasma and cells.

Study Objective:

This study was carried out to show the stability of two analytes measured from VACUETTE® Serum Gel Tubes. The analytes chosen for the study were Lactate Dehydrogenase (LDH) and Potassium (K).

Study design:

Venous blood was collected from 30 randomly chosen donors. The samples were collected in random order to prevent systemic bias.

The following tube type was used in blood collection:

VACUETTE® Serum Separator Clot Activator, 8 ml draw

After venipuncture, the tubes were inverted immediately and centrifuged according to the instructions given by the tube manufacturer.

The analysis was performed on the Hitachi 917 (Roche) with the instrument's accompanying reagents. Measurements were carried out after 0 / 24 / 48 / 72 hours. The samples were stored in an upright position at 4-8°C.

Conclusion:

The study examined the barrier performance of the gel in the VACUETTE® Serum Separator tubes. The results showed that barrier integrity and analyte stability was maintained.

References:

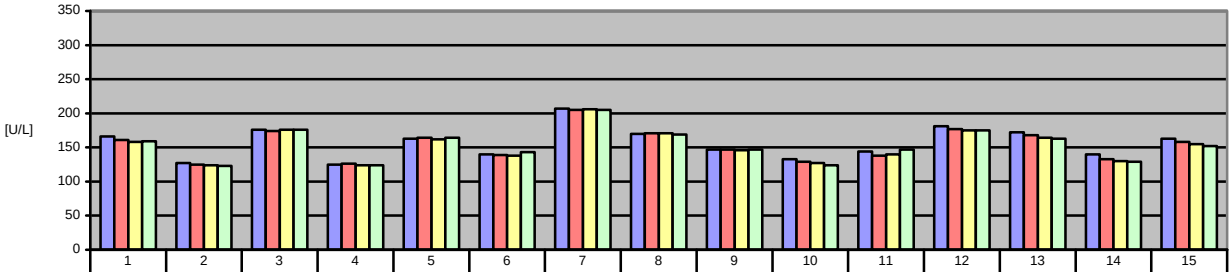
(1) Guder W.G., Narayanan S., Wisser H., Zawta B., Samples: From the Patient to the Laboratory. Wiley-VCH, 3rd edition (2003)

(2) Thomas L., Labor und Diagnose. TH-Books, 5. Auflage (1998)

(3) Tietz N.W., Clinical Guide to Laboratory Tests. W.B. Saunders Company, third edition (1995)

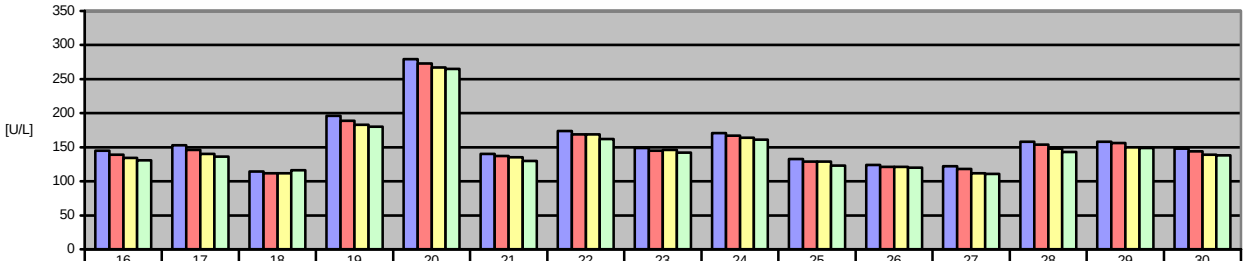
Results:

Lactate Dehydrogenase - Part I
Normal range: < 240 U/L



Patient No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
0 h	166	127	176	125	163	140	207	170	147	133	144	181	172	140	163
24 h	161	125	174	126	164	139	205	171	147	129	138	177	168	133	158
48 h	158	124	176	124	162	138	206	171	146	127	140	175	164	130	155
72 h	159	123	176	124	164	143	205	169	147	124	147	175	163	129	152

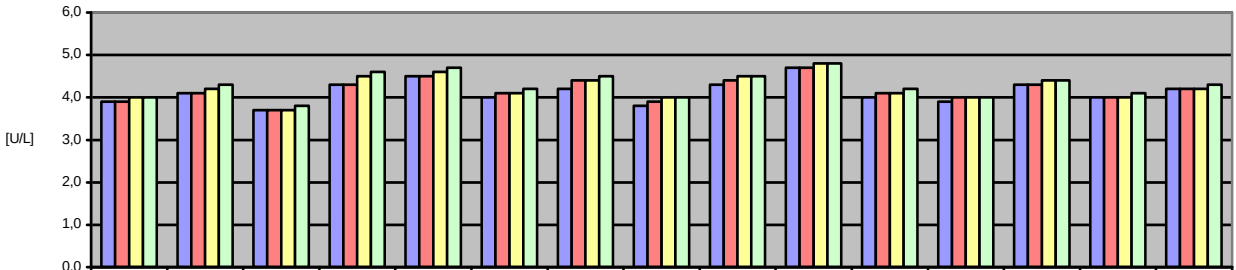
Lactate Dehydrogenase - Part II
Normal range: < 240 U/L



	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
0 h	145	153	114	196	279	140	174	149	171	133	124	122	158	158	148
24 h	139	146	112	189	273	137	169	145	167	129	121	118	154	156	144
48 h	134	140	112	183	267	135	169	146	164	129	121	112	148	150	139
72 h	131	136	116	180	265	130	162	142	161	123	120	111	143	149	138

Patient No.

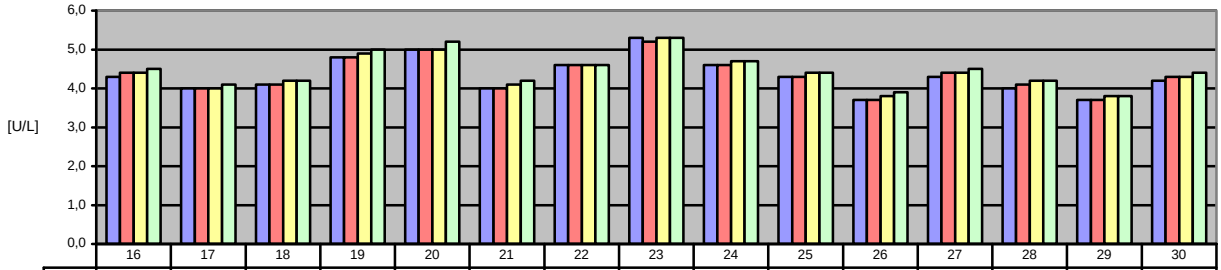
Potassium - Part I
Normal range: 3,3 - 5,1 mmol/L



	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
0 h	3,9	4,1	3,7	4,3	4,5	4,0	4,2	3,8	4,3	4,7	4,0	3,9	4,3	4,0	4,2
24 h	3,9	4,1	3,7	4,3	4,5	4,1	4,4	3,9	4,4	4,7	4,1	4,0	4,3	4,0	4,2
48 h	4,0	4,2	3,7	4,5	4,6	4,1	4,4	4,0	4,5	4,8	4,1	4,0	4,4	4,0	4,2
72 h	4,0	4,3	3,8	4,6	4,7	4,2	4,5	4,0	4,5	4,8	4,2	4,0	4,4	4,1	4,3

Patient No.

Potassium - Part II
Normal range: 3,3 - 5,1 mmol/L



	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
0 h	4,3	4,0	4,1	4,8	5,0	4,0	4,6	5,3	4,6	4,3	3,7	4,3	4,0	3,7	4,2
24 h	4,4	4,0	4,1	4,8	5,0	4,0	4,6	5,2	4,6	4,3	3,7	4,4	4,1	3,7	4,3
48 h	4,4	4,0	4,2	4,9	5,0	4,1	4,6	5,3	4,7	4,4	3,8	4,4	4,2	3,8	4,3
72 h	4,5	4,1	4,2	5,0	5,2	4,2	4,6	5,3	4,7	4,4	3,9	4,5	4,2	3,8	4,4

Patient No.