

Comparison of the heart-type fatty acid-binding protein (H-FABP) with the high sensitive cardiac troponin T

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Introduction:

Heart-type fatty acid-binding protein (H-FABP) is a low molecular weight protein involved in the intracellular uptake and buffering of long chain fatty in the myocardium. It is an early marker for acute coronary syndrome. Troponin T (TnT) is a component of the contractile apparatus of the striated musculature. Cardiac TnT is a cardio-specific, highly sensitive marker for myocardial damage. The aim of our study was to compare the results obtained with the H-FABP and the highly sensitive cardiac troponins (hsTnT) and to test their cardiospecificity in healthy runners.

Results:

At T0, none of the subjects were positive for hsTnT but 35% were positive for H-FABP; at T1, 83% for hsTnT and 100% for H-FABP; at T3, 83% for hsTnT and 96% for H-FABP (table 1). At T0, the regression equation was $H-FABP\ T0 = 3.9454 - 0.1001 \times hsTnT\ T0$; at T1: $H-FABP\ T1 = 51.838 - 1.7026 \times hsTnT\ T1$; at T3: $H-FABP\ T3 = 47.977 - 1.6193 \times hsTnT\ T3$ (figure 3). No correlation was observed between the two biomarkers at the different time.

Table 1

TnThs T0	TnThs T1	TnThs T3	hfabp T0	hfabp T1	hfabp T3
0,011	0,132	0,093	2,58	43,93	37,26
0,005	0,031	0,068	2,16	8,27	6,9
0,009	0,058	0,062	2,24	33,06	31,87
0,005	0,117	0,1	1,57	50,62	41,07
0,007	0,054	0,038	3,01	33,38	22,07
0,005	0,068	0,038	1,65	8,78	6,01
0,005	0,041	0,063	1,93	21,56	38,25
0,008	0,065	0,127	4,12	17,73	13,83
0,007	0,02	0,076	1,93	9,53	9,25
0,008	0,16	0,088	3,86	79,5	47,07
0,005	0,057	0,039	2,47	120	120
0,005	0,07	0,065	3,06	64,67	53,1
0,006	0,144		1,83	7,06	
0,005	0,058	0,04	1,65	7,69	3,5
0,008	0,105	0,079	1,83	5,86	3,55
0,007	0,108	0,088	2,11	10,55	5,35
0,006	0,012	0,018	3,42	5,25	4,73
0,005	0,007	0,01	1,67	6,27	7,34
0,005	0,015	0,015	1,72	21,75	30,79
0,005	0,013	0,014	0,77	2,99	2,32
0,005	0,016	0,013	1,47	4,4	2,76
0,005	0,005	0,005	2,73	35,54	23,3
0,005	0,011	0,007	2,21	14,95	10,03

Materials and Methods:

Twenty three runners (marathon) were enrolled. We drowned samples at three times: just before (T0), just after (T1), and three hours after the end of the race (T3). H-FABP was determined with a Randox immunoturbidimetric assay and hs-TnT with a Roche electrochemiluminescence immunoassay, both on Cobas 6000. A linear regression was calculated to observe if there is any correlation between the two biomarkers. Values above the 95th percentile for H-FABP (2.5ng/mL) and the 99th percentile for hsTnT (14ng/L) were considered as positive.

Figure 1 Comparison TnThs vs HFABP (T0)

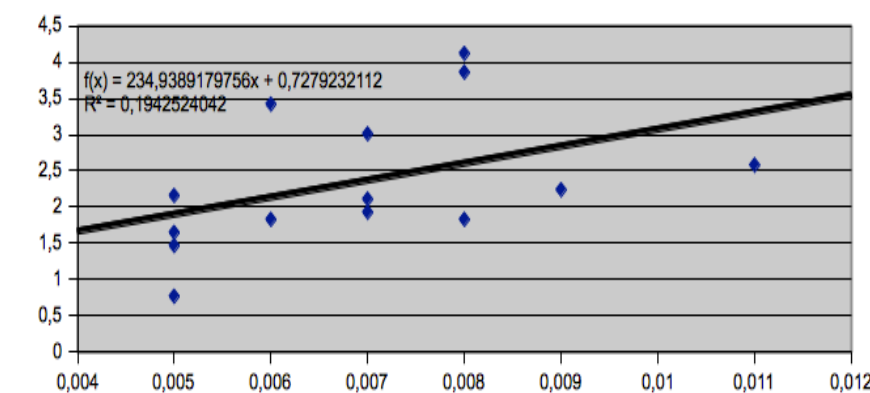


Figure 2 Comparison TnThs vs HFABP (T1)

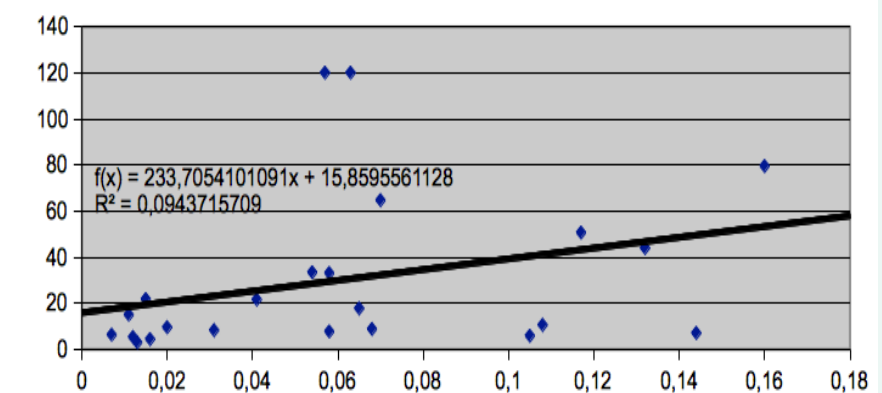
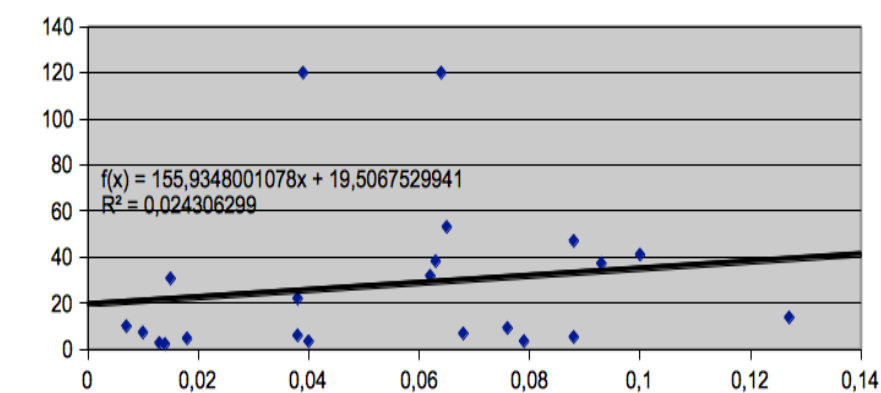


Figure 3 Comparison TnThs vs HFABP (T3)



Conclusions: We observed a significant increase of H-FABP and hsTnT in runners. These markers are independent to each other. These values could biologically correspond to a heart ischemia. However, we suggested that exercise-induced cardiac hsTnT and H-FABP release is not a marker of exercise-induced pathology but likely a physiologic response to effort or an exercise-induced cardiac remodelling.