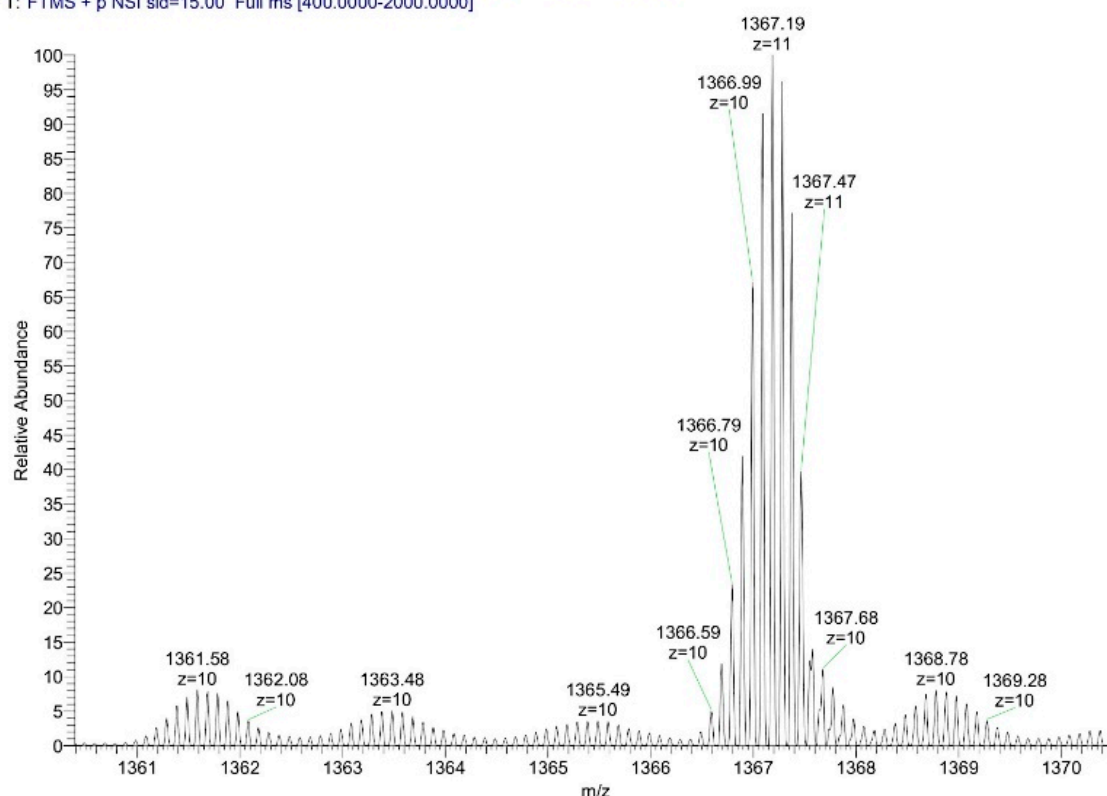


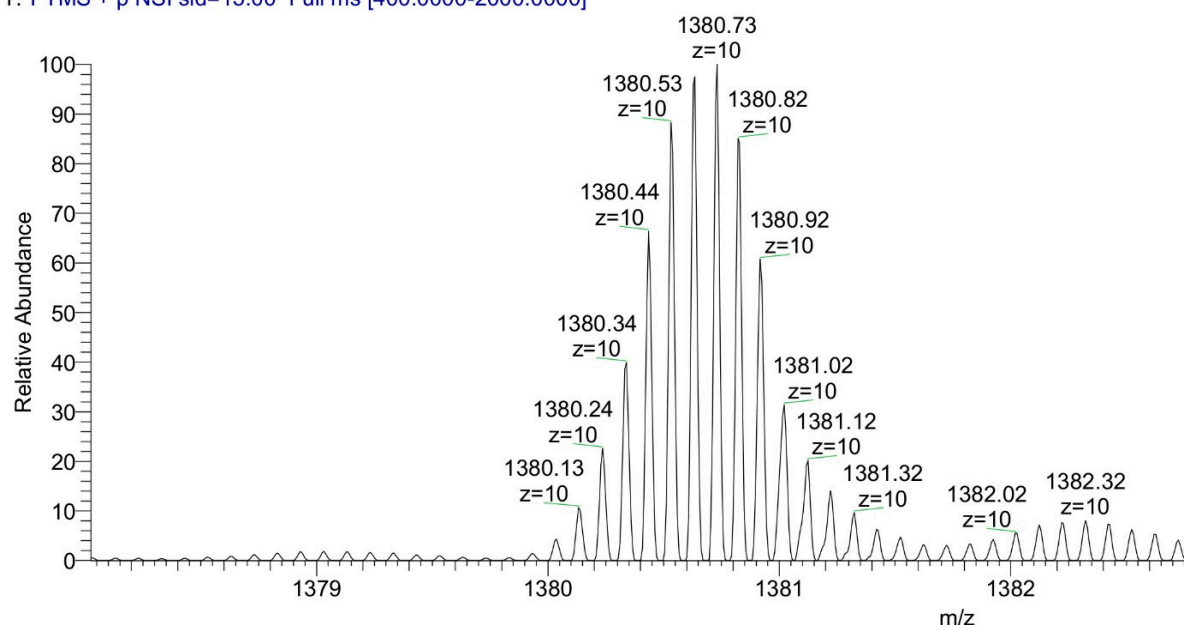
**Figure S1.** Isolation of HDP-1 by cation-exchange chromatography under conditions described in [25]. Horizontal bar indicates the fraction containing HDP-1.

20231118\_034\_RZ\_HDP-1\_protein 11/18/23 14:13:46  
 30 cm 100um Inertsil 1.9 pulled-emitter, cartridgeTrapColumn  
 20231118\_034\_RZ\_HDP-1\_protein #331-338 RT: 20.14-20.54 AV: 8 NL: 1.86E8  
 T: FTMS + p NSI sid=15.00 Full ms [400.0000-2000.0000]



(a)

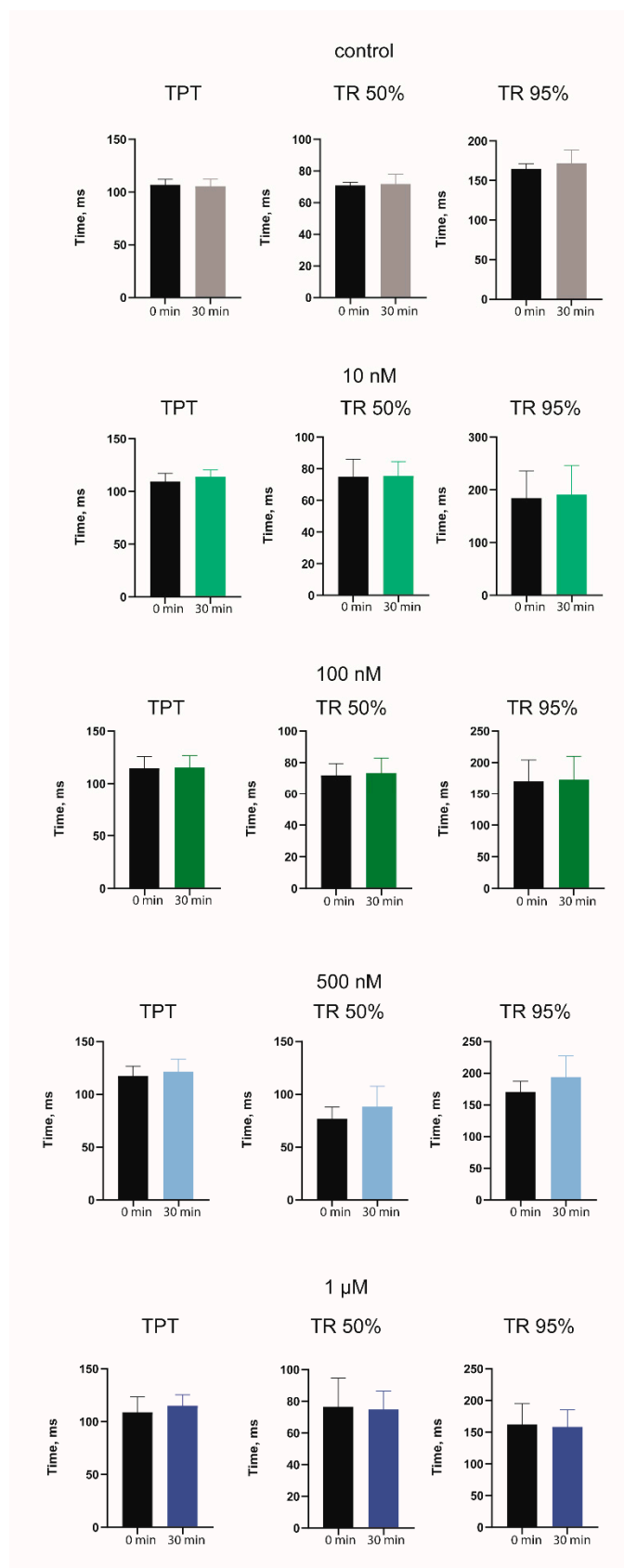
20231118\_034\_RZ\_HDP-1\_protein #299-305 RT: 18.31-18.65 AV: 7 NL: 8.51E8  
 T: FTMS + p NSI sid=15.00 Full ms [400.0000-2000.0000]



(b)

Figure S2. High-resolution mass-spectra of HDP-1 registered in positive mode. (a) Fragment of the spectrum of the acidic HDP-1 subunit (HDP-1I),  $z = +10$ . It should be noted that the experimental mass is 40 ae higher than the calculated one, which is apparently due to the bound calcium ion. A signal corresponding to a

protein without calcium could not be detected. (b) Fragment of the spectrum of the basic HDP-1 subunit (HDP-1P),  $z = +10$ . Within the experimental error, the determined mass corresponds to the calculated one.



**Figure S3.** Effect of different HDP-1 concentrations on the kinetic parameters of contraction. TPT, time to peak tension, TR 50%, the time from peak tension to 50% relaxation, TR 95%, the time from peak tension to 95% relaxation. No statistically significant differences with control were observed for all experiments.

**Table S1.** Effect of different HDP-1 concentrations on the kinetic parameters of the papillary muscle contraction.

Parameter	Control n=5		HDP-1 concentration							
			10nM n=5		100nM n=5		500nM n=6		1 $\mu$ M n=6	
	Initial	30 min	Initial	30 min	Initial	30 min	Initial	30 min	Initial	30 min
Time to peak tension, ms	107 $\pm$ 2	105 $\pm$ 3	110 $\pm$ 3	114 $\pm$ 3	115 $\pm$ 5	116 $\pm$ 5	119 $\pm$ 6	123 $\pm$ 5	109 $\pm$ 6	115 $\pm$ 4
Time of relaxation to 50%, ms	71 $\pm$ 1	72 $\pm$ 3	75 $\pm$ 5	76 $\pm$ 4	72 $\pm$ 3	74 $\pm$ 4	78 $\pm$ 4	89 $\pm$ 9	77 $\pm$ 7	75 $\pm$ 5
Time of relaxation to 95%, ms	165 $\pm$ 3	172 $\pm$ 8	185 $\pm$ 23	191 $\pm$ 25	170 $\pm$ 15	173 $\pm$ 16	167 $\pm$ 7	186 $\pm$ 11	162 $\pm$ 13	158 $\pm$ 11