Supporting file

Impact of ionic liquid on the protein thermodynamics in the presence of cold atmospheric plasma and gamma rays

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Fig. S1: Chemical denaturation profile of Myoglobin protein after treatment with DBD plasma for different time intervals such as 6, 12 and 24 min (a) control myoglobin, (b) myoglobin + TEMS and (c) myoglobin + TBMS.

Fig. S2: Chemical denaturation profile of Myoglobin after treatment with different gamma rays absorbed dose such as 220, 420 and 1130 Gy ((a) control myoglobin, (b) myoglobin + TEMS and (c) myoglobin + TBMS.

Fig. S3: Far-UV CD spectra for myoglobin at 222 nm after treatment with DBD plasma for different time intervals such as 6, 12 and 24 mins (a) control Myoglobin, (b) Myoglobin with TEMS and (c) Myoglobin with TBMS.

Fig. S4: Far-UV CD spectra for myoglobin at 222 nm after treatment with different gamma rays absorbed dose such as 220, 420 and 1130 Gy a) control Myoglobin, (b) Myoglobin with TEMS and (c) Myoglobin with TBMS.

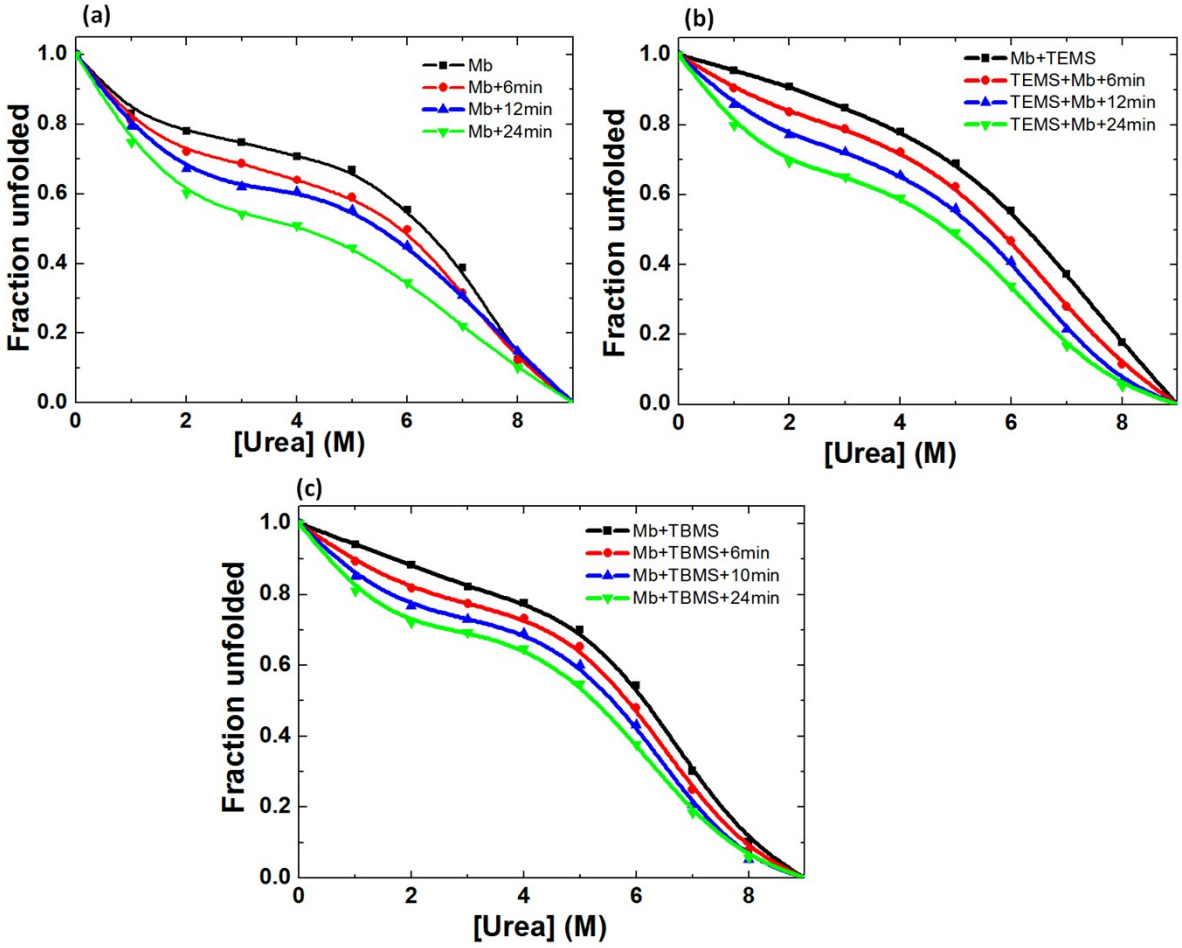
(a)
Fraction unfolded
[Urea] (M)
Mb
Mb+6min
Mb+12min
Mb+24min
(b)
Fraction unfolded
[Urea] (M)
Mb+TEMS
TEMS+Mb+6min
TEMS+Mb+12min
TEMS+Mb+24min
(c)
Fraction unfolded
[Urea] (M)
Mb+TBMS
Mb+TBMS+6min
Mb+TBMS+10min
Mb+TBMS+24min

Fig. S1

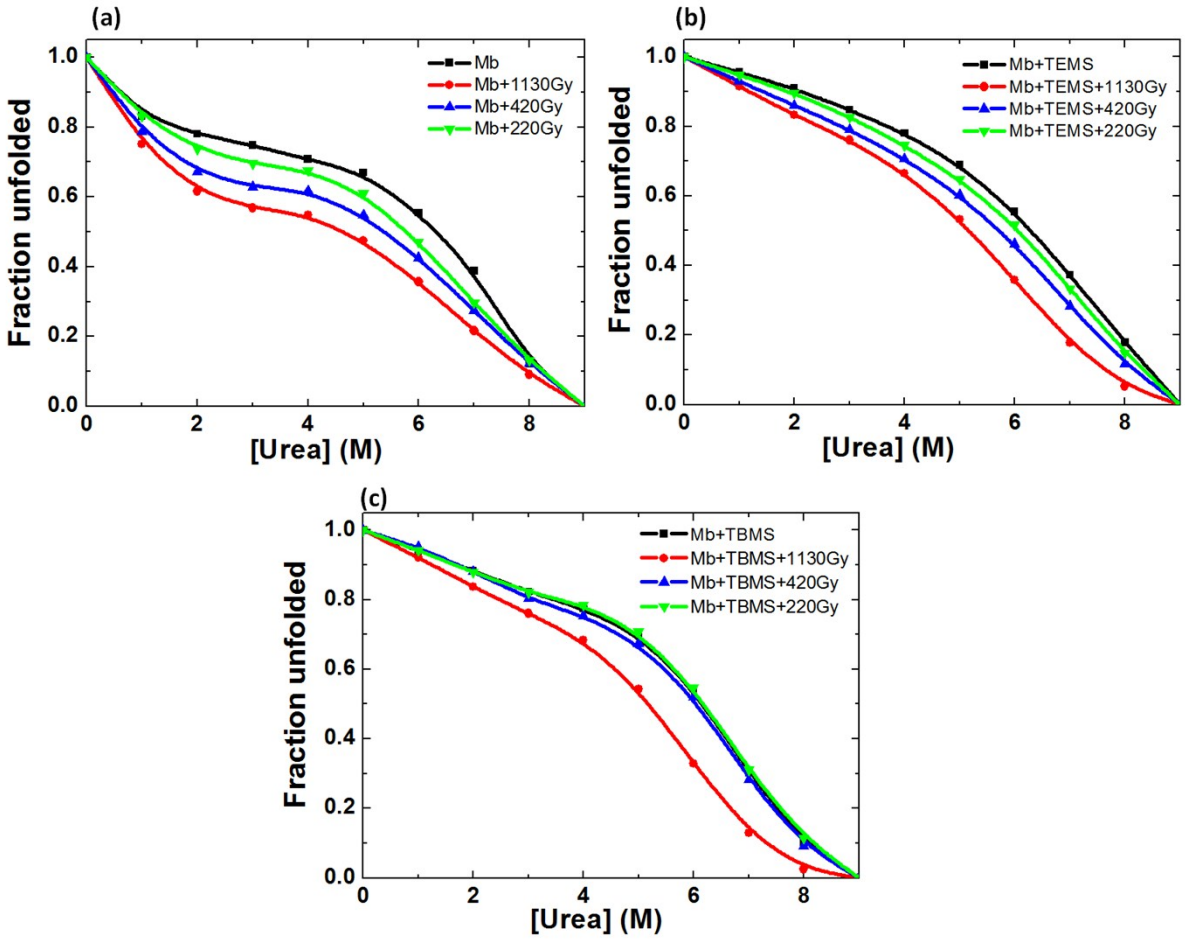
(a)
Fraction unfolded
[Urea] (M)
Mb
Mb+1130Gy
Mb+420Gy
Mb+220Gy
(b)
Fraction unfolded
[Urea] (M)
Mb+TEMS
Mb+TEMS+1130Gy
Mb+TEMS+420Gy
Mb+TEMS+220Gy
(c)
Fraction unfolded
[Urea] (M)
Mb+TBMS
Mb+TBMS+1130Gy
Mb+TBMS+420Gy
Mb+TBMS+220Gy

Fig. S2

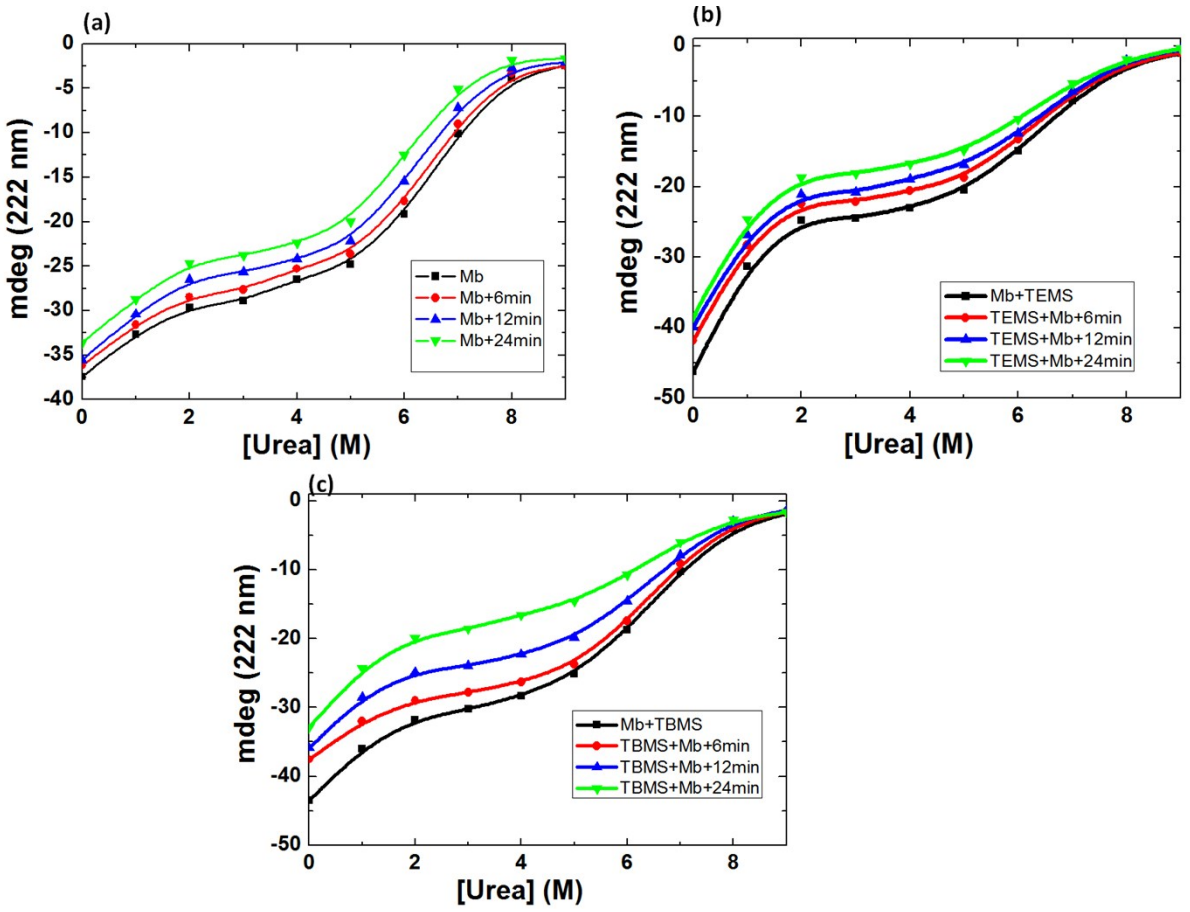
(a)
mdeg (222 nm)
[Urea] (M)
Mb
Mb+6min
Mb+12min
Mb+24min
(b)
mdeg (222 nm)
[Urea] (M)
Mb+TEMS
TEMS+Mb+6min
TEMS+Mb+12min
TEMS+Mb+24min
(c)
mdeg (222 nm)
[Urea] (M)
Mb+TBMS
TBMS+Mb+6min
TBMS+Mb+12min
TBMS+Mb+24min

Fig. S3

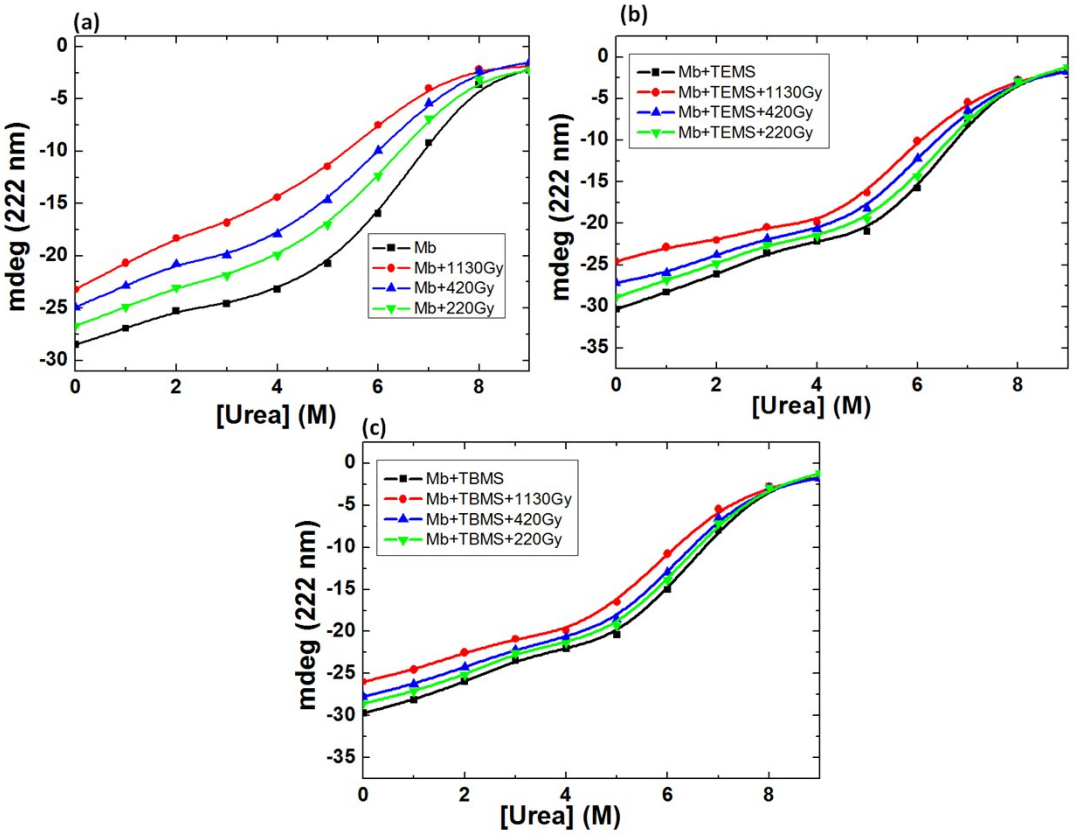
(a)
mdeg (222 nm)
[Urea] (M)
Mb
Mb+1130Gy
Mb+420Gy
Mb+220Gy
(b)
mdeg (222 nm)
[Urea] (M)
Mb+TEMS
Mb+TEMS+1130Gy
Mb+TEMS+420Gy
Mb+TEMS+220Gy
(c)
mdeg (222 nm)
[Urea] (M)
Mb+TBMS
Mb+TBMS+1130Gy
Mb+TBMS+420Gy
Mb+TBMS+220Gy

Fig. S4

Table S1. Thermodynamic changes in the Myoglobin before and after DBD plasma and gamma rays treatment.

Samples	Melting Temperature (T_m ℃)
Mb	83.4
Mb + 6 min	81.6
Mb + 12 min	75.5
Mb + 24 min	74.9
Mb + TEMS	83.4
Mb + 6 min + TEMS	82.5
Mb + 10 min + TEMS	81.7
Mb + 20 min + TEMS	81.1
Mb + TBMS	77.3
Mb + 5 min + TBMS	76.6
Mb + 10 min + TBMS	75.6
Mb + 20 min + TBMS	73.1
Mb + 220 Gy	82.9
Mb + 420 Gy	81.5
Mb + 1130 Gy	80.6
Mb + 220 Gy+ TEMS	82.3
Mb + 420 Gy+ TEMS	81.1
Mb + 1130 Gy+ TEMS	80.5
Mb + 220 Gy+ TBMS	74.6
Mb + 420 Gy+ TBMS	74.3
Mb + 1130 Gy+ TBMS	70.9

Table S2: Root-mean-square atomic positional deviation (RMSD) and standard deviation of myoglobin, myoglobin + TEMS and myoglobin + TBMS

RMSD			
	Mb	Mb + TEMS	Mb + TBMS
20 % H_2O_2 (-)	1.75	2.54	2.97
20 % H_2O_2 (+)	2.17	2.68	3.10
stdev			
	Mb	Mb + TEMS	Mb + TBMS
20 % H_2O_2 (-)	0.16	0.34	0.39
20 % H_2O_2 (+)	0.45	0.30	0.44