CheckMyMetal(CMM) report for PDB code: 7ben

PDB title: Crystal structure of the receptor binding domain of sars-cov-2 spike glycoprotein in a ternary complex with covox-253 and covox-75 fabs (2.5Å)

Warning: Due to a lack of high-resolution structural data the validity of *Valence* and *nVECSUM* parameters has not been established for rarely observed metals

ID	Res.	Metal	*Occupancy*	*B factor (env.)*[1]	*Ligands*	*Valence*[2]	*nVECSUM*[3]	*Geometry*[1,4]	*gRMSD*(°)[1]	*Vacancy*[1]	Bidentate	Alt. metal
H:301	BR	Br	1	**141.3 (65.8)**		N/A	N/A	**Free**	N/A	N/A	N/A	
H:302	BR	Br	1	*78.8 (59.1)*		N/A	N/A	**Free**	N/A	N/A	N/A	
A:301	BR	Br	1	**132 (58.4)**		N/A	N/A	**Free**	N/A	N/A	N/A	
B:304	BR	Br	1	*94 (79.2)*		N/A	N/A	**Free**	N/A	N/A	N/A	
B:305	BR	Br	1	**256.2 (90.8)**		N/A	N/A	**Free**	N/A	N/A	N/A	
D:301	BR	Br	1	**78.7 (40.8)**		N/A	N/A	**Free**	N/A	N/A	N/A	
G:303	BR	Br	1	**136.5 (56.8)**		N/A	N/A	**Free**	N/A	N/A	N/A	
G:304	BR	Br	1	*112.1 (69.4)*		N/A	N/A	**Free**	N/A	N/A	N/A	
G:305	BR	Br	1	**141.5 (57)**	**O_1**	**0.09**	**1**	**Poorly Coordinated**	N/A	N/A	0	
G:306	BR	Br	1	**128.9 (64.1)**		N/A	N/A	**Free**	N/A	N/A	N/A	
G:307	BR	Br	1	**149.6 (63.4)**	*O_2*	**0.4**	**0.9**	*Square Planar*	**38.4°**	**50%**	0	
G:308	IOD	I	1	**254.1 (86.4)**		N/A	N/A	**Free**	N/A	N/A	N/A	
I:303	BR	Br	1	**174.8 (0)**		N/A	N/A	**Free**	N/A	N/A	N/A	

Legend: Not applicable | **Outlier** | *Borderline* | Acceptable

Column	Description
Occupancy	Occupancy of ion under consideration
B factor (env.)[1]	Metal ion B factor, with valence-weighted environmental average B factor in parenthesis
Ligands	Elemental composition of the coordination sphere
Valence[2]	Summation of bond valence values for an ion binding site. *Valence* accounts for metal-ligand distances
nVECSUM[3]	Summation of ligand vectors, weighted by bond valence values and normalized by overall valence. Increase when the coordination sphere is not symmetrical due to incompleteness.
Geometry[1,4]	Arrangement of ligands around the ion, as defined by the *NEIGHBORHOOD* algorithm
gRMSD(°)[1]	R.M.S. Deviation of observed geometry angles (L-M-L angles) compared to ideal geometry, in degrees
Vacancy[1]	Percentage of unoccupied sites in the coordination sphere for the given geometry
Bidentate	Number of residues that form a bidentate interaction instead of being considered as multiple ligands
Alt. metal	A list of alternative metal(s) is proposed in descending order of confidency, assuming metal environment is accurately determined. This feature is still experimental. It requires user discrimination and cannot be blindly accepted

(1) Zheng H, Chordia MD, Cooper DR, Chruszcz M, Müller P, Sheldrick GM, Minor W (2014) *Nature Protocols, 9(1),* 156-70.
(2) Brown ID (2009) *Chem. Rev., 109,* 6858-6919.
(3) Müller P, Köpke S, Sheldrick GM (2003) *Acta Crystallogr. D Biol. Crystallogr., 59,* 32-37.
(4) Kuppuraj G, Dudev M, Lim C (2009) *J. Phys. Chem. B, 113,* 2952-2960.
(5) *CSD: Cambridge Structural Database*

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Citing CheckMyMetal (CMM):
Validation of metal-binding sites in macromolecular structures with the CheckMyMetal web server. Zheng,H., Chordia,M.D., Cooper,D.R., Chruszcz,M., Müller,P., Sheldrick,G.M., Minor,W. (2014) *Nature Protocols, 9(1),* 156-70.