

Dehydration without heating: use of polymer-assisted grinding for understanding the stability of hydrates in the presence of polymeric excipients

Davide Scaramuzza,[‡] Gabriela Schneider Rauber,^{†,⊥} Dario Voinovich,[‡] Dritan Hasa,^{§,}*

[‡] Department of Chemical and Pharmaceutical Sciences, University of Trieste, P.le Europa 1, 34127, Trieste, Italy

[†] Department of Chemistry, University of Cambridge, Lensfield Road, Cambridge, CB2 1EW, UK

[⊥] CAPES Foundation, Ministry of Education of Brazil, Brasilia - DF 70040-020, Brazil

[§] Leicester School of Pharmacy, De Montfort University, The Gateway, Leicester, LE1 9BH, UK

* email: dritan.hasa@dmu.ac.uk

1) POLAG experiments with different amounts of polymer

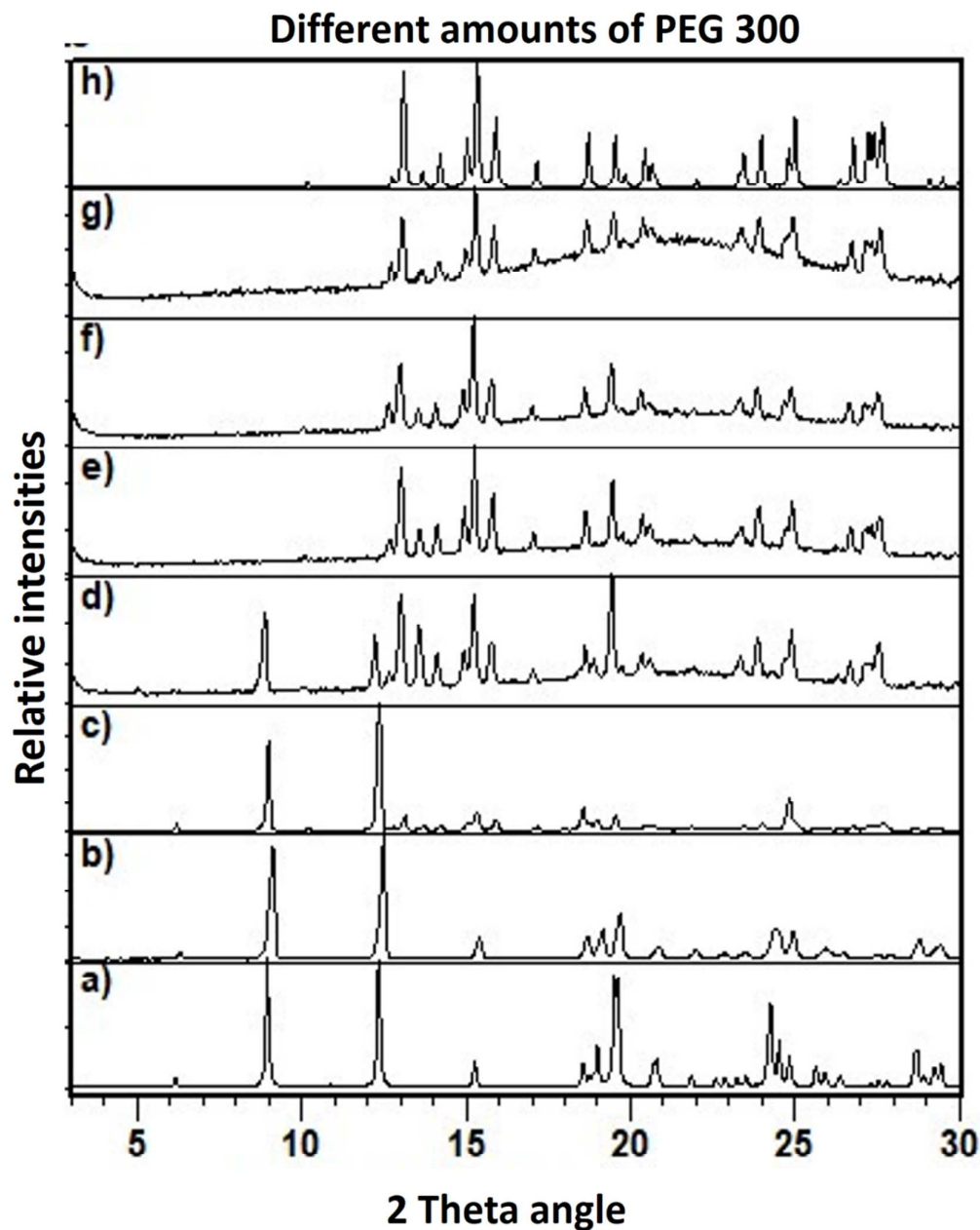


Figure S1. PXRD pattern of: (a) calculated CBZ DH (b), (c), (d), (e), (f) and (g), POLAG experiments using 25, 50, 100, 150, 200, and 400 mg of PEG 300 respectively, (h) calculated CBZ Form III.

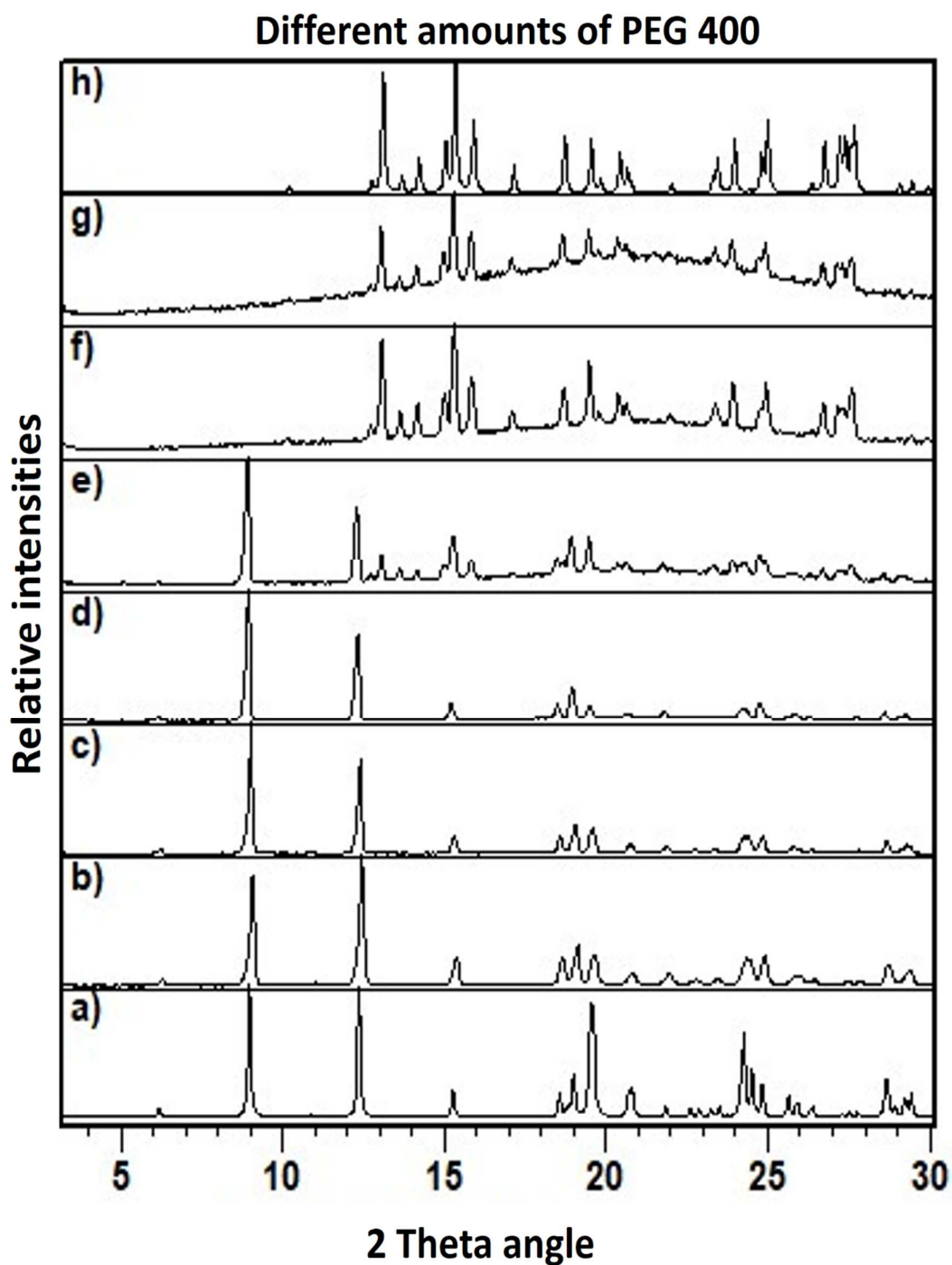


Figure S2. PXRD pattern of: (a) calculated CBZ DH (b), (c), (d), (e), (f) and (g), POLAG experiments using 25, 50, 100, 150, 200, and 400 mg of PEG 400 respectively, (h) calculated CBZ Form III.

Different amounts of PEG 600

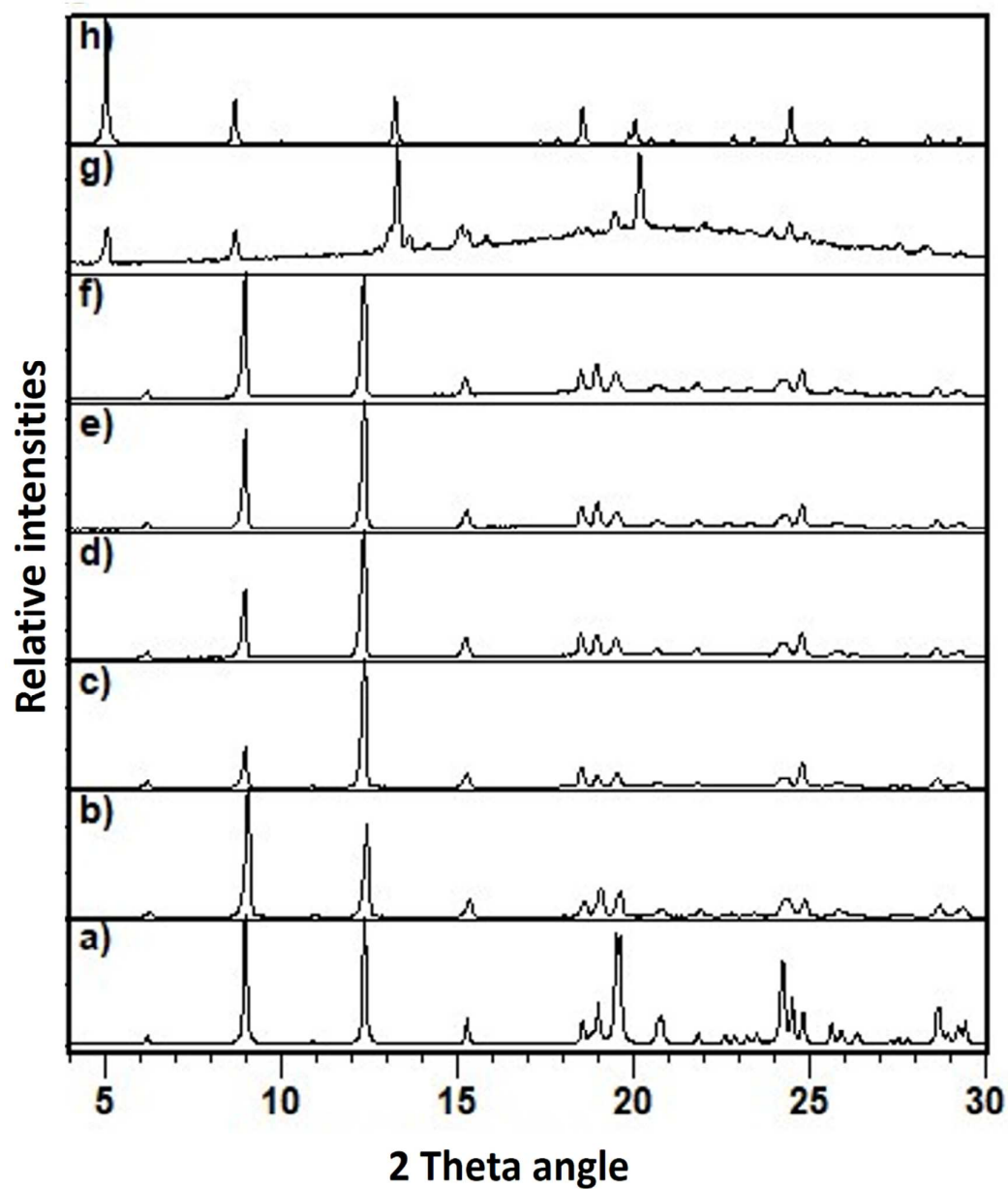


Figure S3. PXRD pattern of: (a) calculated CBZ DH (b), (c), (d), (e), (f) and (g), POLAG experiments using 25, 50, 100, 150, 200, and 400 mg of PEG 600 respectively, (h) calculated CBZ Form II.

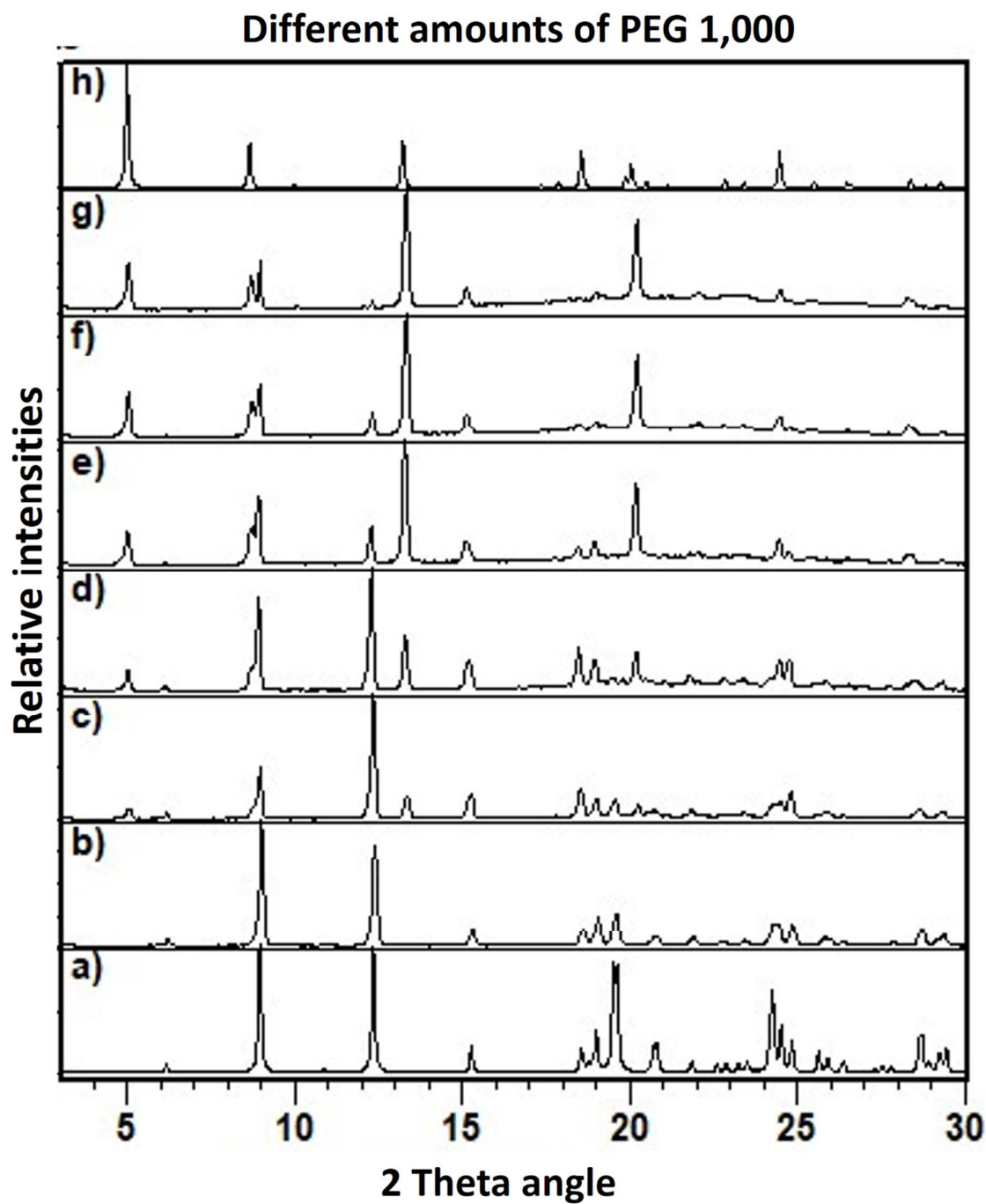


Figure S4. PXRD pattern of: (a) calculated CBZ DH (b), (c), (d), (e), (f) and (g), POLAG experiments using 25, 50, 100, 150, 200, and 400 mg of PEG 1,000 respectively, (h) calculated CBZ Form II.

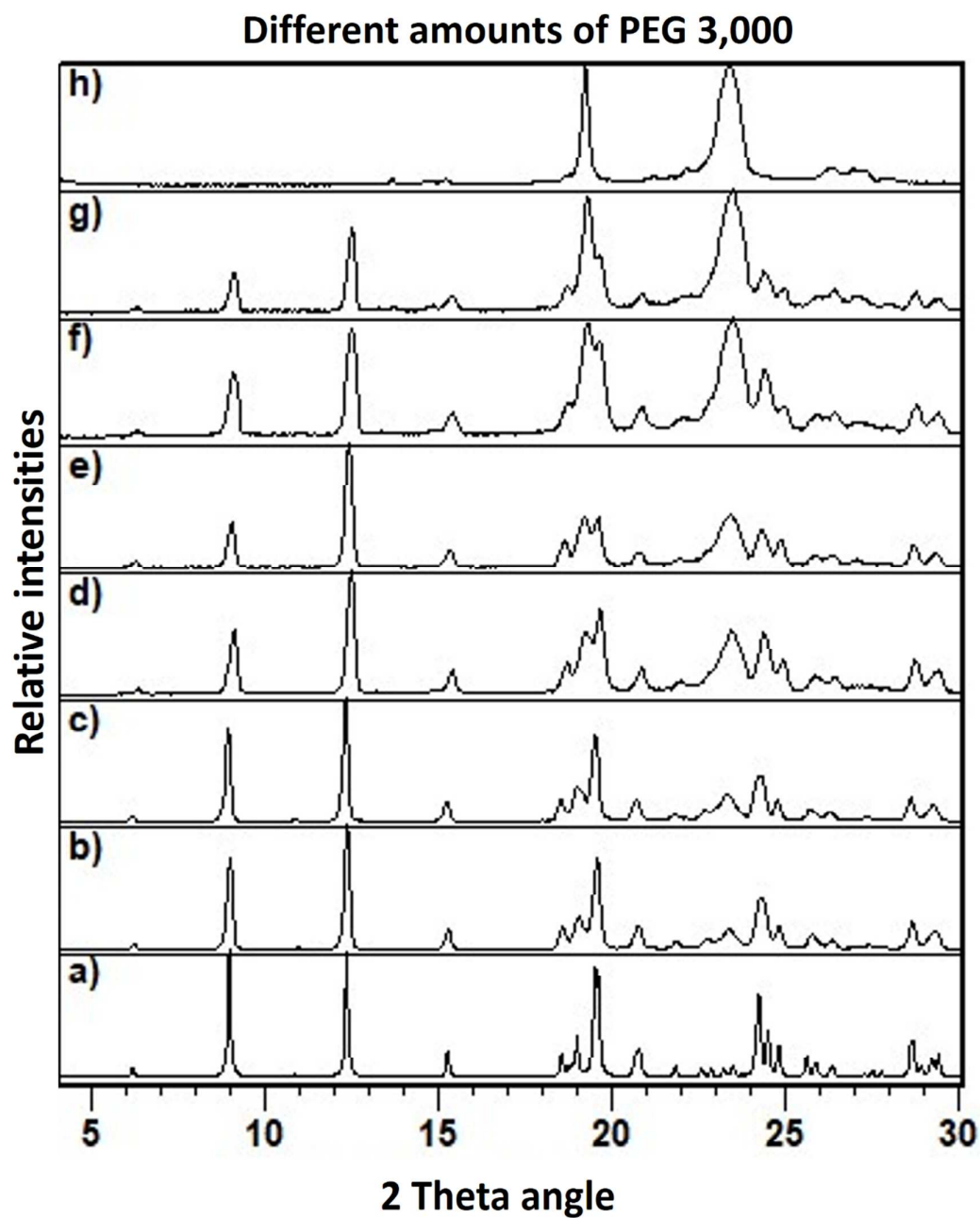


Figure S5. PXRD pattern of: (a) calculated CBZ DH (b), (c), (d), (e), (f) and (g), POLAG experiments using 25, 50, 100, 150, 200, and 400 mg of PEG 3,000 respectively, (h) pure PEG 3,000.

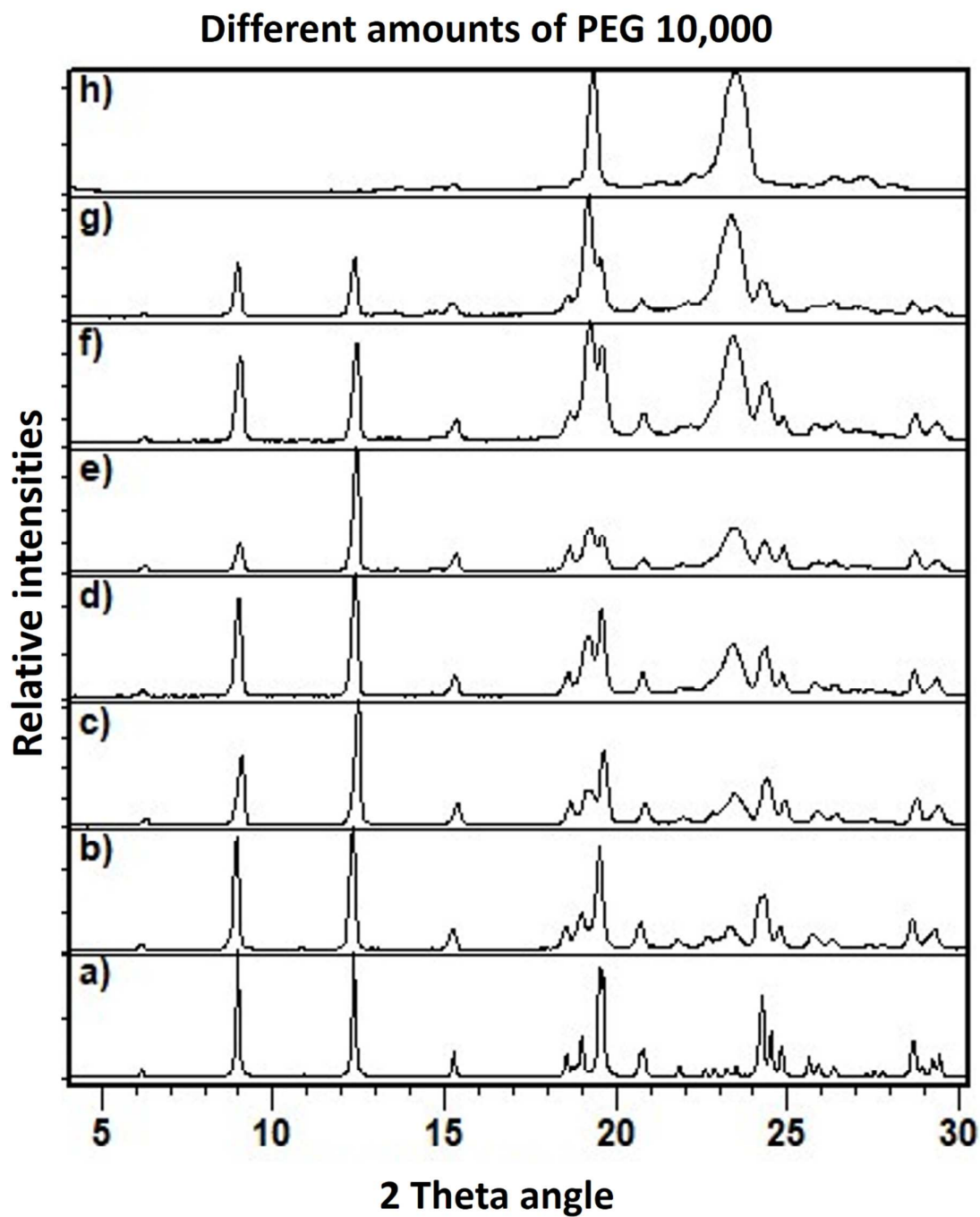


Figure S6. PXRD pattern of: (a) calculated CBZ DH (b), (c), (d), (e), (f) and (g), POLAG experiments using 25, 50, 100, 150, 200, and 400 mg of PEG 10,000 respectively, (h) pure PEG 35,000.

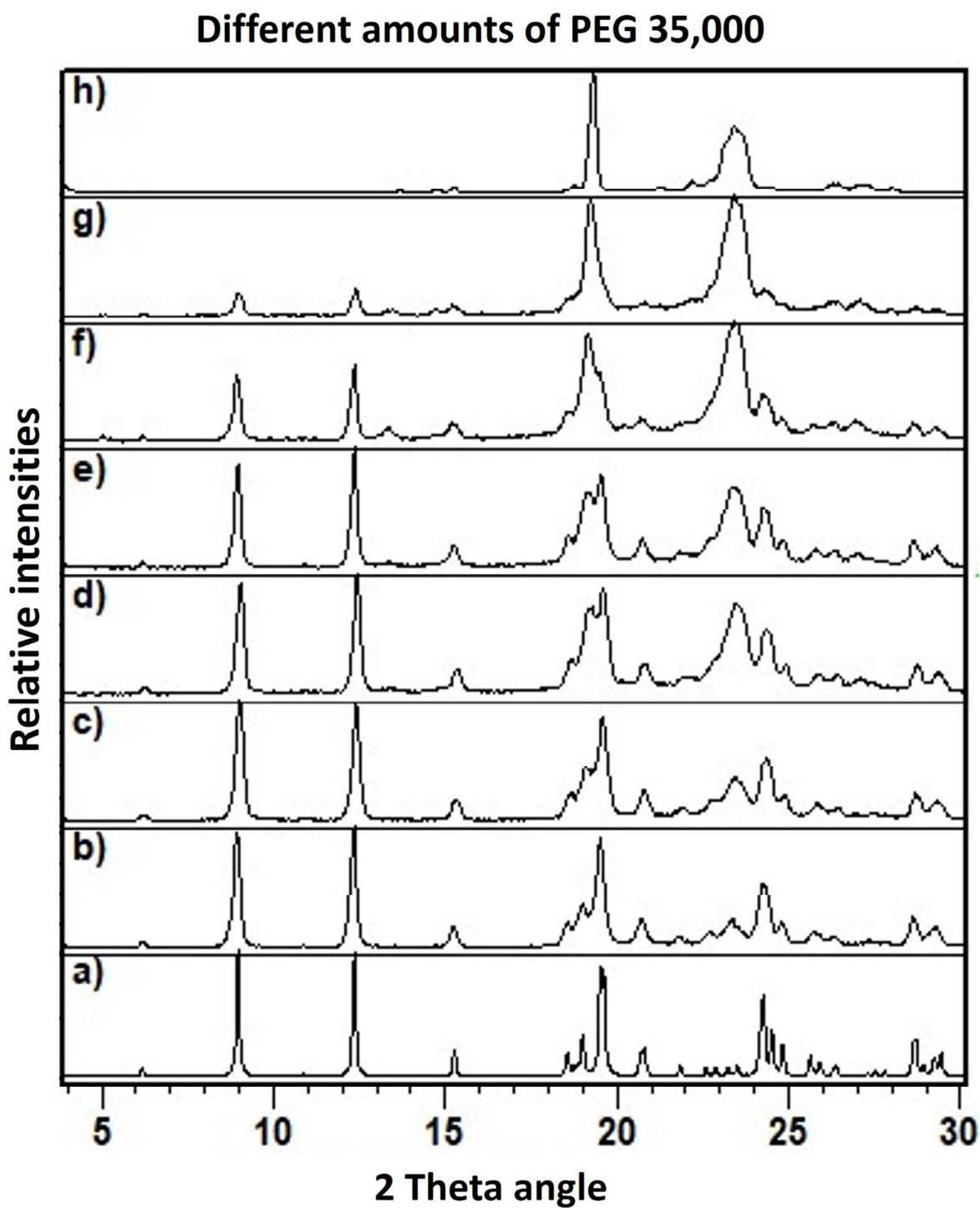


Figure S7. PXRD pattern of: (a) calculated CBZ DH (b), (c), (d), (e), (f) and (g), POLAG experiments using 25, 50, 100, 150, 200, and 400 mg of PEG 35,000 respectively, (h) pure PEG 35,000.

2) POLAG Experiments at different milling times

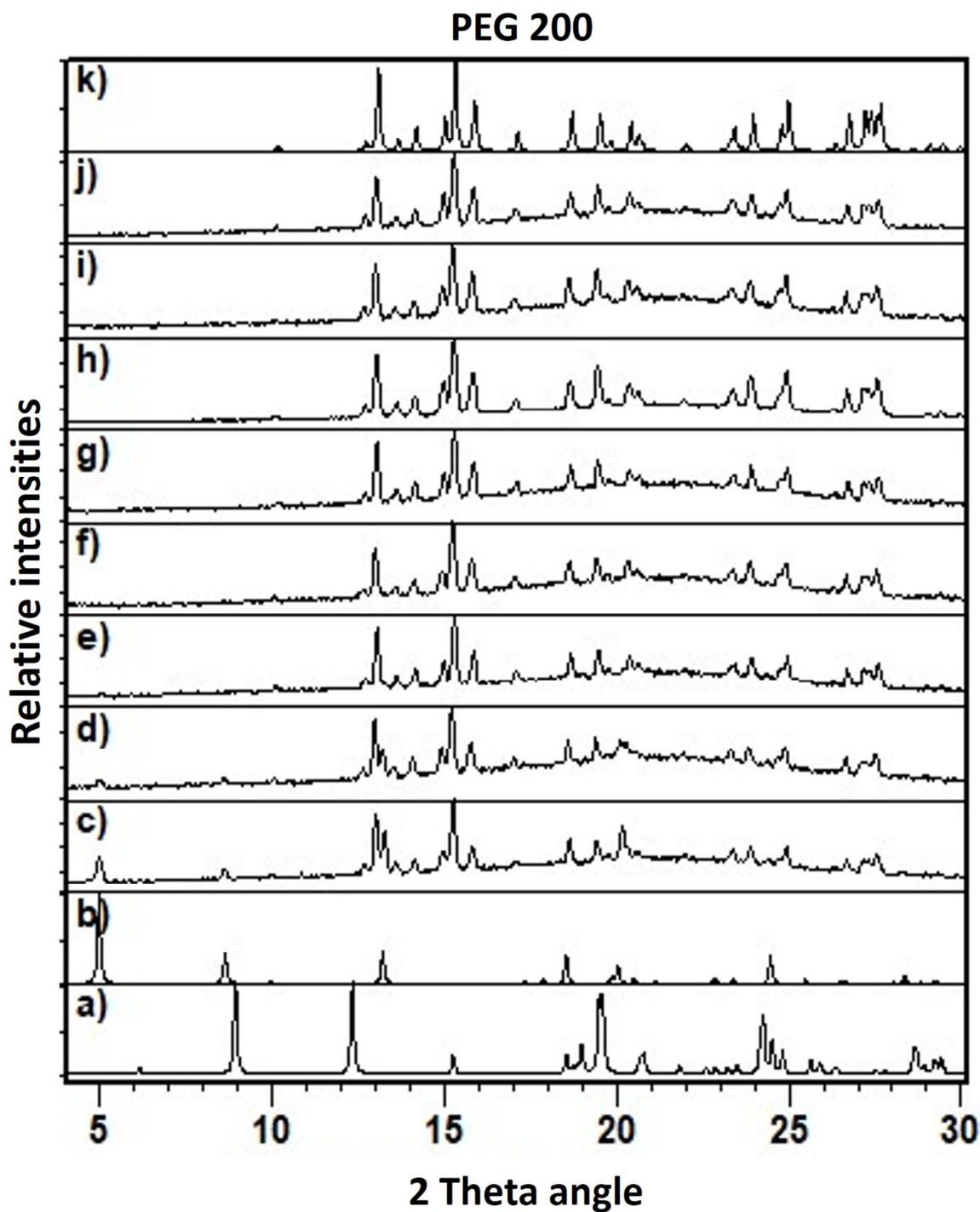


Figure S8. PXRD pattern of: (a) calculated CBZ DH, (b) calculated anhydrous CBZ Form II, (c), (d), (e), (f), (g), (h), (i) and (j) products obtained by grinding 200 mg of CBZ DH in the presence of 400 mg of PEG 200 for , 2.5, 3.5, 5, 10, 30, 120 and 180 min respectively, (k) calculated CBZ Form III.

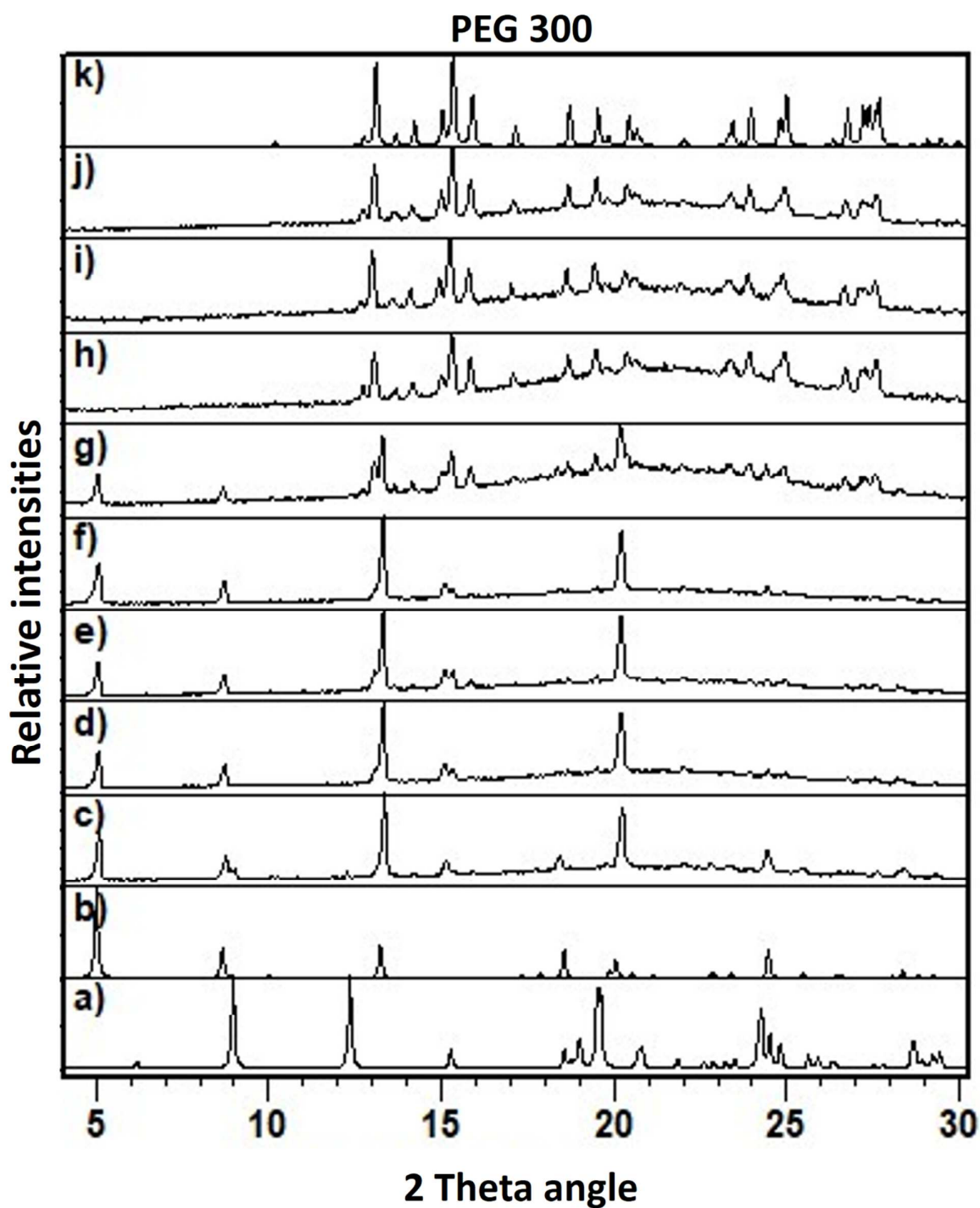


Figure S9. PXRD pattern of: (a) calculated CBZ DH, (b) calculated anhydrous CBZ Form II, (c), (d), (e), (f), (g), (h), (i) and (j) products obtained by grinding 200 mg of CBZ DH in the presence of 400 mg of PEG 300 for , 2.5, 3.5, 5, 10, 30, 120 and 180 min respectively, (k) calculated CBZ Form III.

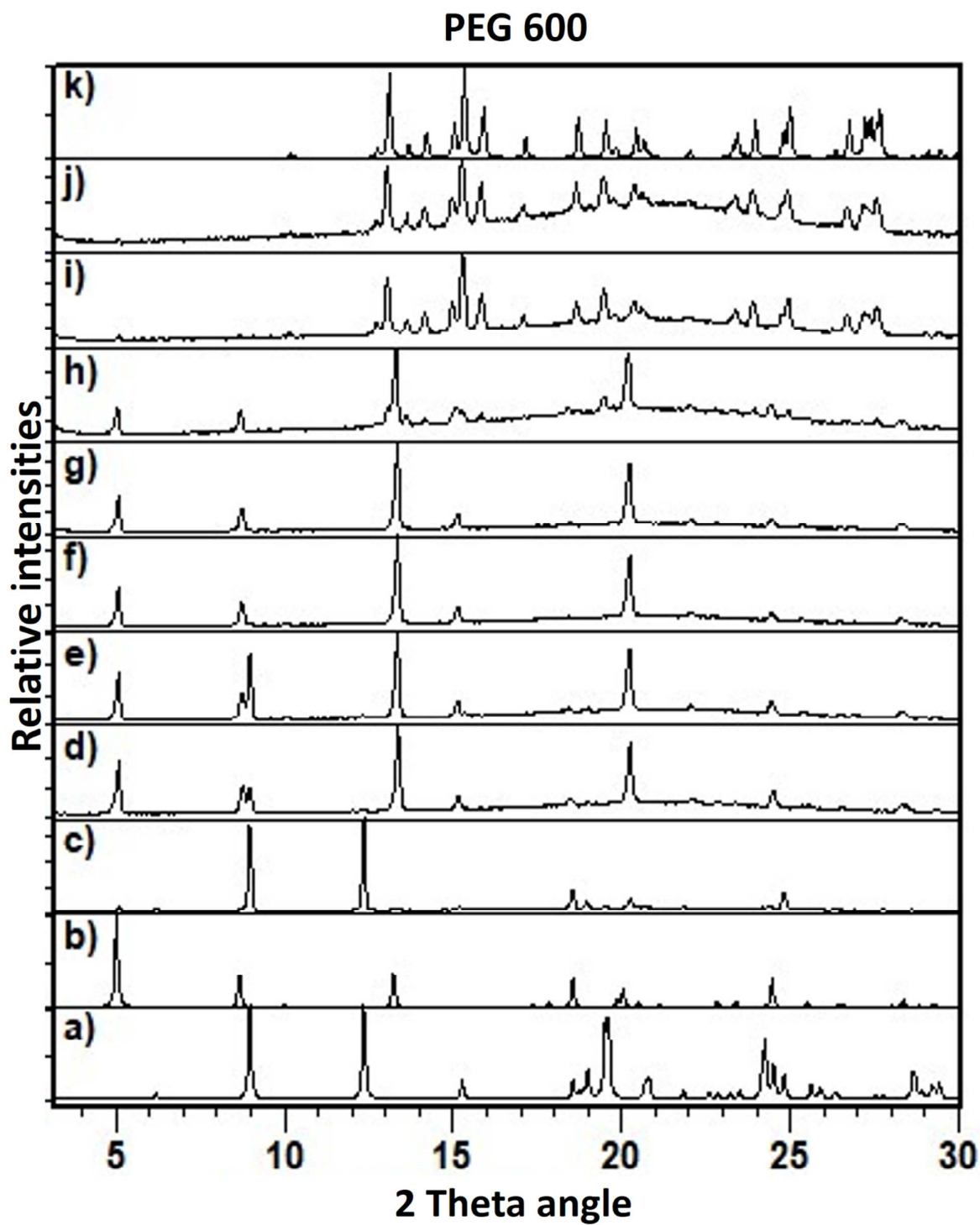


Figure S10. PXRD pattern of: (a) calculated CBZ DH, (b) calculated anhydrous CBZ Form II, (c), (d), (e), (f), (g), (h), (i) and (j) products obtained by grinding 200 mg of CBZ DH in the presence of 400 mg of PEG 600 for , 2.5, 3.5, 5, 10, 30, 120 and 180 min respectively, (k) calculated CBZ Form III.

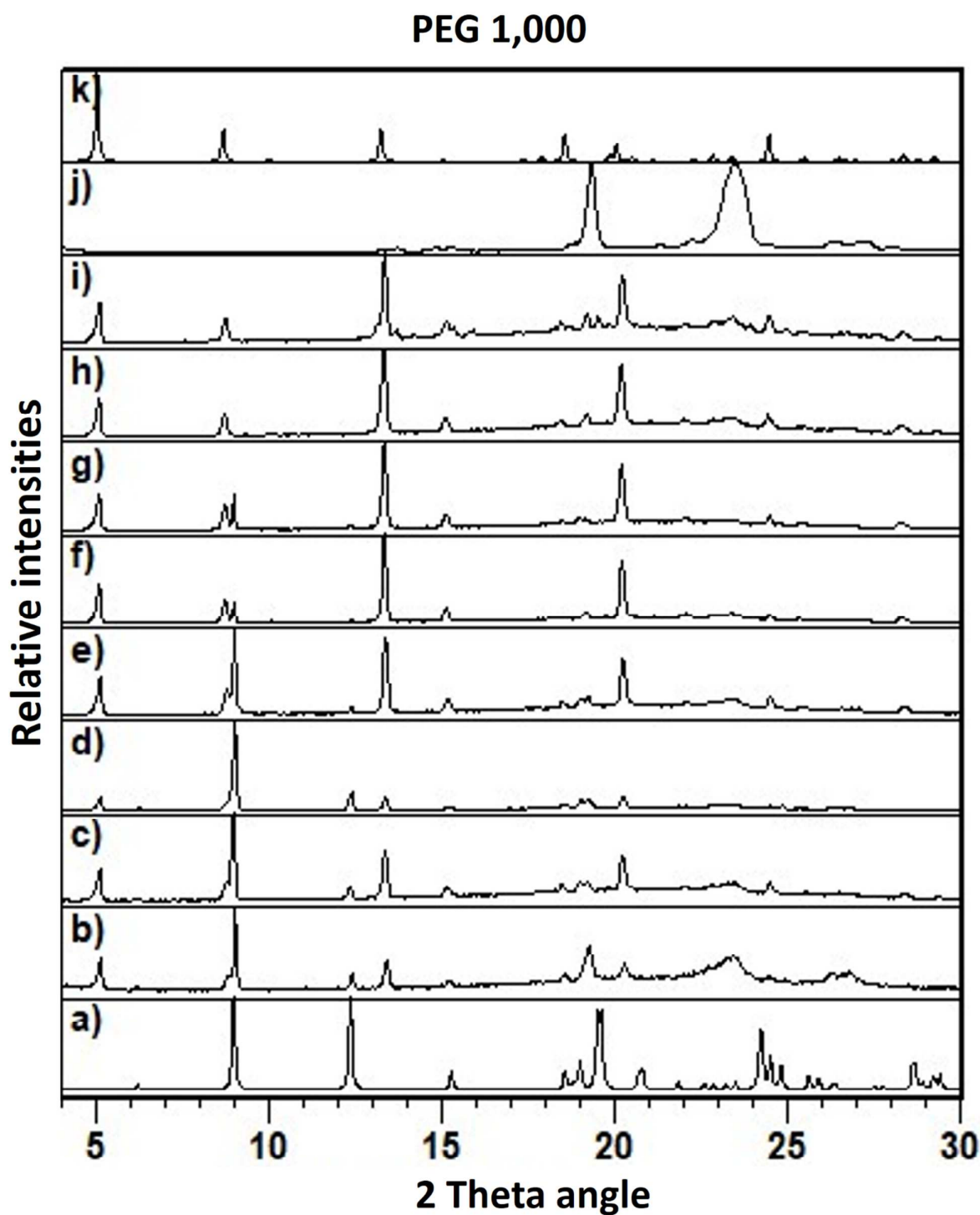


Figure S11. PXRD pattern of: (a) calculated CBZ DH, (b), (c), (d), (e), (f), (g), (h) and (i) products obtained by grinding 200 mg of CBZ DH in the presence of 400 mg of PEG 1,000 for , 2.5, 3.5, 5, 10, 30, 120 and 180 min respectively, (j) pure PEG 1,000 and (k) calculated anhydrous CBZ Form II.

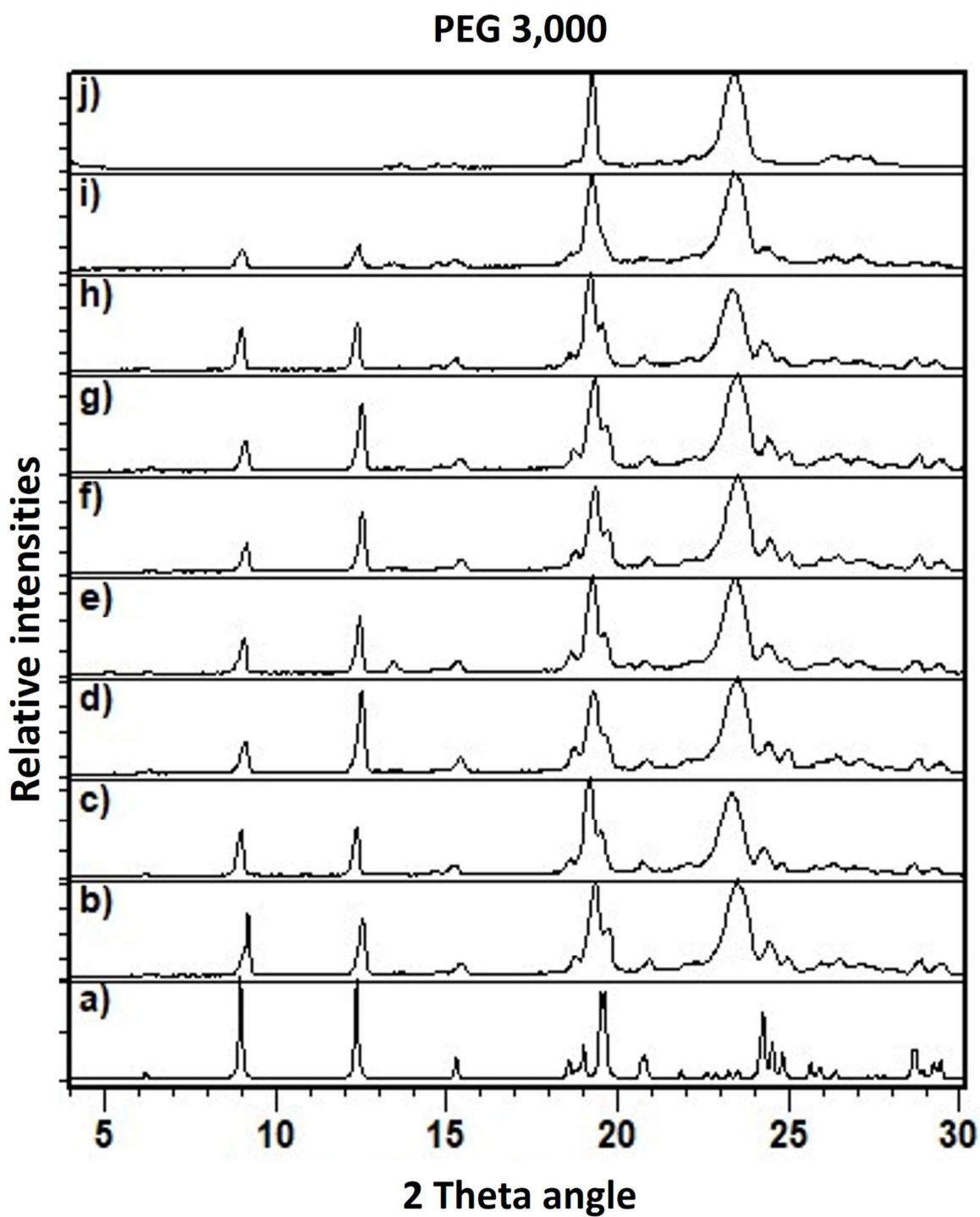


Figure S12. PXRD pattern of: (a) calculated CBZ DH, (b), (c), (d), (e), (f), (g), (h) and (i) products obtained by grinding 200 mg of CBZ DH in the presence of 400 mg of PEG 3,000 for , 2.5, 3.5, 5, 10, 30, 120 and 180 min respectively, (j) pure PEG 1,000.

Pure CBZ DH

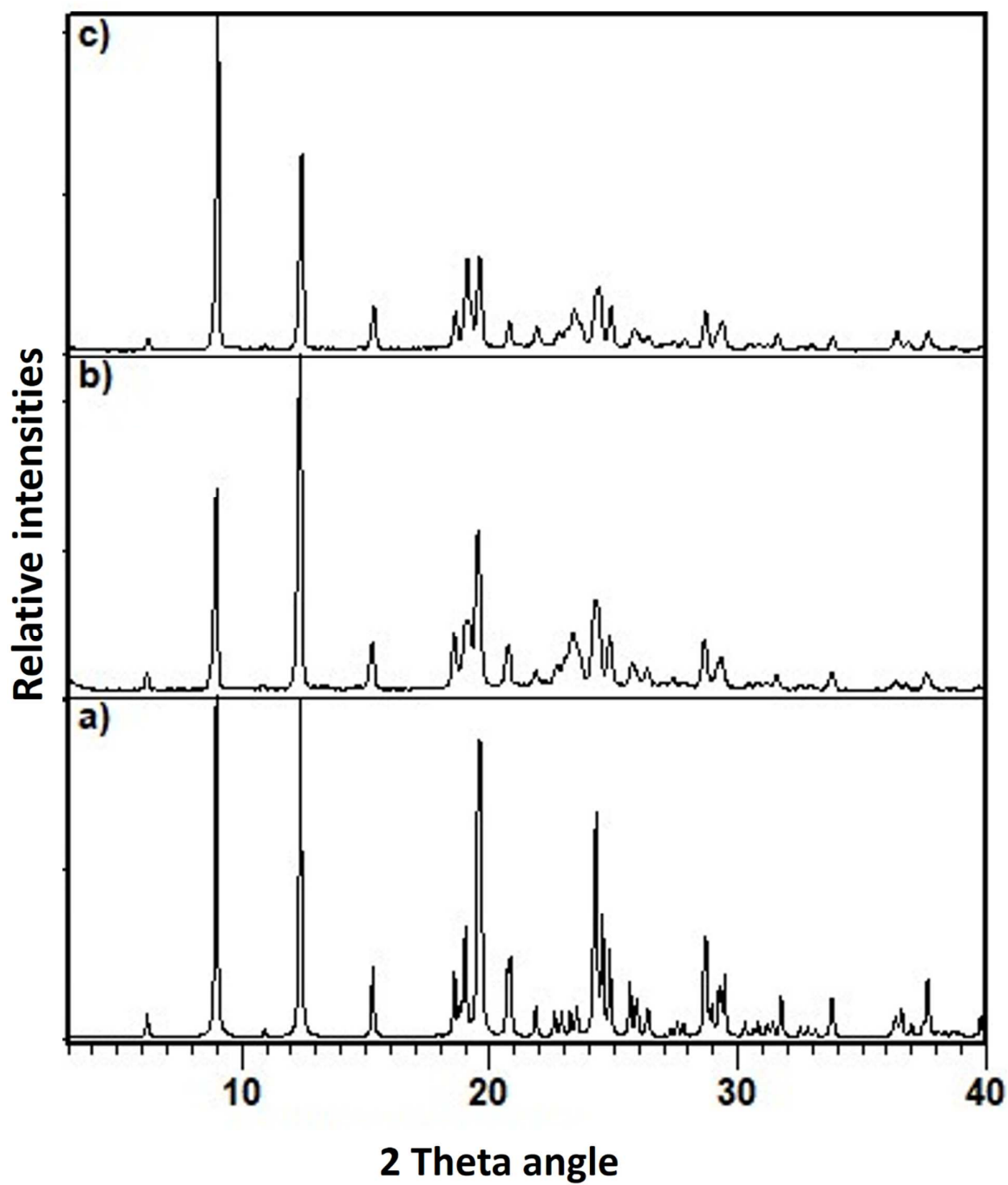


Figure S13. PXRD pattern of: (a) calculated CBZ DH, (b) and (c), products obtained by neat grinding 200 mg of CBZ DH 120 and 180 min respectively.