

Figure S1. One-factor at a time experiments showing effects of crude glycerol on 2,3-BD production by *P. polymyxa*. Inoculum size, temperature, yeast extract, tryptone, ammonium sulfate and ammonium acetate were kept at 8%, 37 °C, 7 g/L, 7 g/L, 3 g/L and 5 g/L, respectively. Error bars show standard deviations of means ($n = 3$).

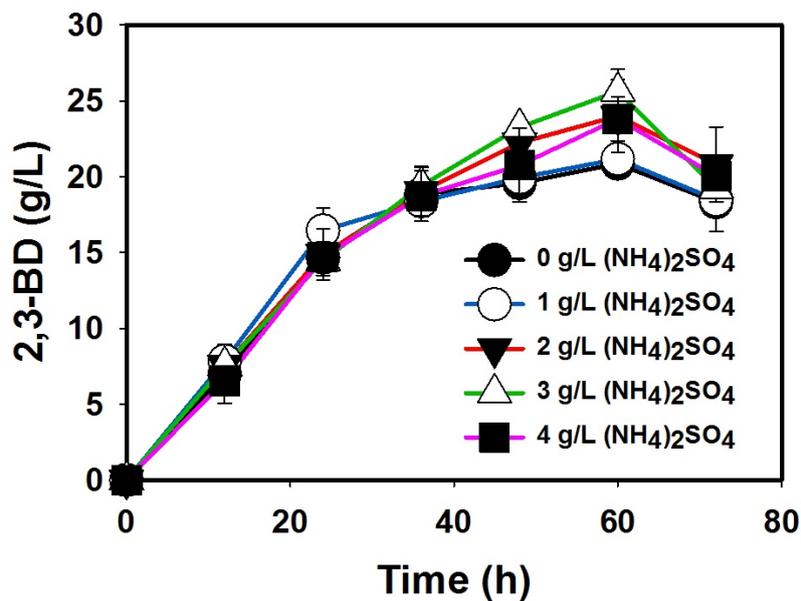


Figure S2. One-factor at a time experiments showing effects of ammonium sulfate on 2,3-BD production by *P. polymyxa*. Inoculum size, temperature, glycerol, yeast extract, tryptone and ammonium acetate were kept at 8%, 37 °C, 10 g/L, 7g/L, 7 g/L and 5 g/L, respectively. Error bars show standard deviations of means ($n = 3$).

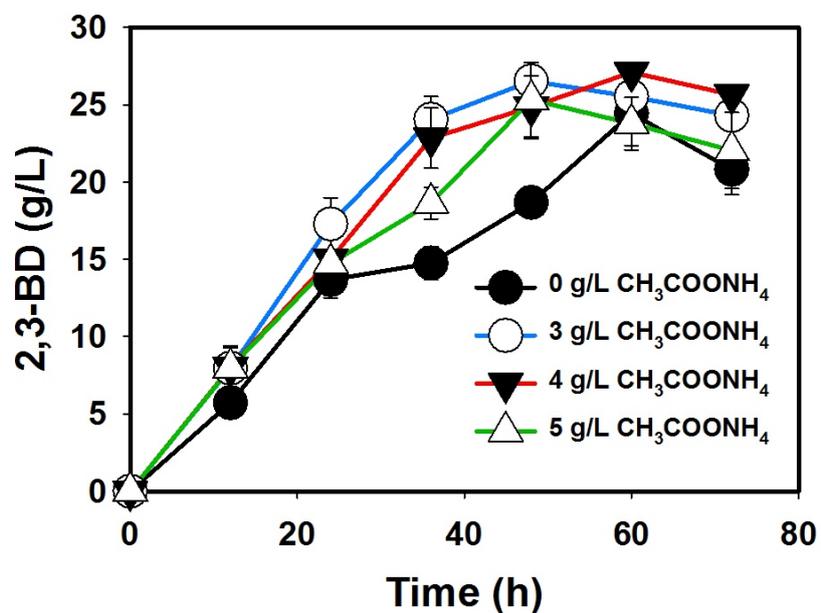


Figure S3. One-factor at a time experiments showing effects of ammonium acetate on 2,3-BD production by *P. polymyxa*. Inoculum size, temperature, glycerol, yeast extract, tryptone and ammonium sulfate were kept at 8%, 37 °C, 10 g/L, 7 g/L, 7 g/L and 3 g/L, respectively. Error bars show standard deviations of means ($n = 3$).

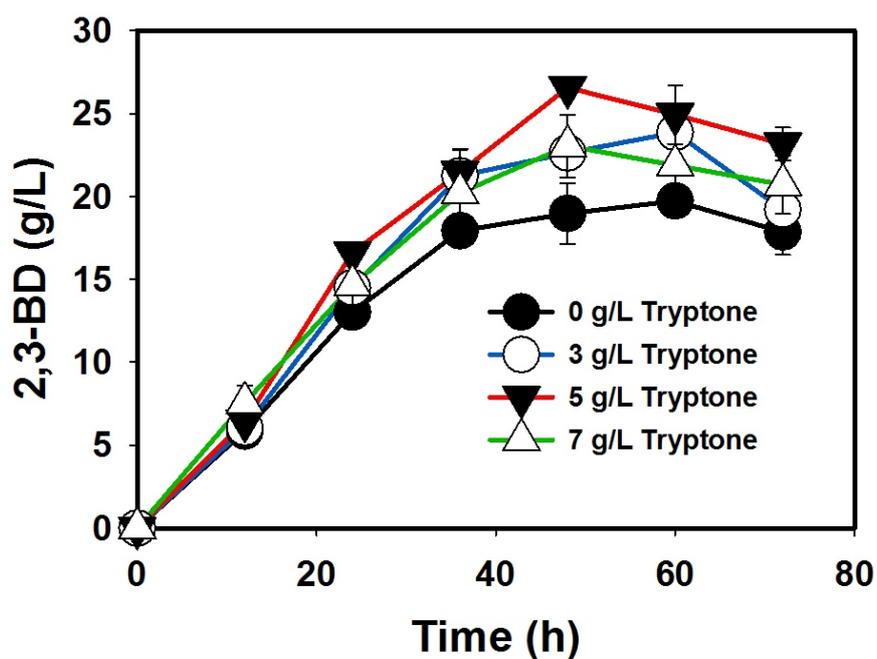


Figure S4. One-factor at a time experiments showing effects of tryptone on 2,3-BD production by *P. polymyxa*.

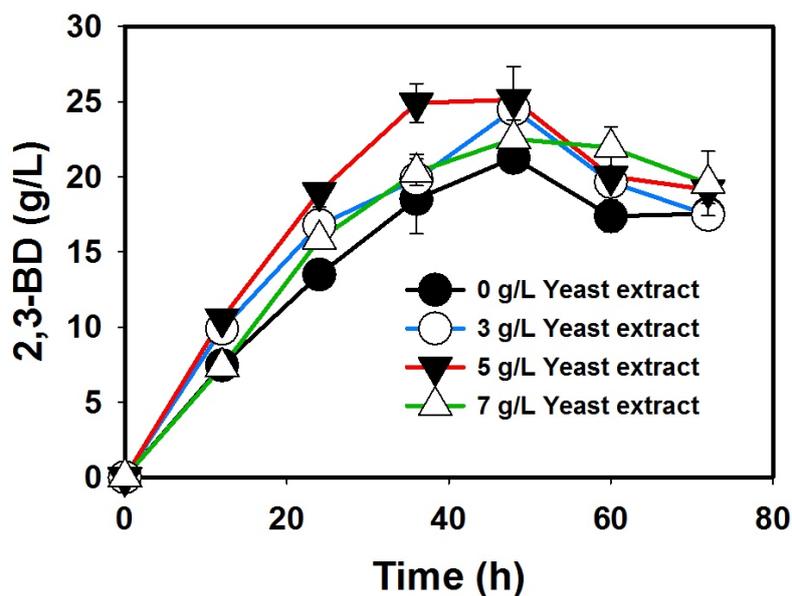


Figure S5. One-factor at a time experiments showing effects of yeast extract on 2,3-BD production by *P. polymyxa*. Inoculum size, temperature, glycerol, tryptone, ammonium sulfate and ammonium acetate were kept at 8%, 37 °C, 10 g/L, 7g/L, 3 g/L and 5 g/L, respectively. Error bars show standard deviations of means ($n = 3$).

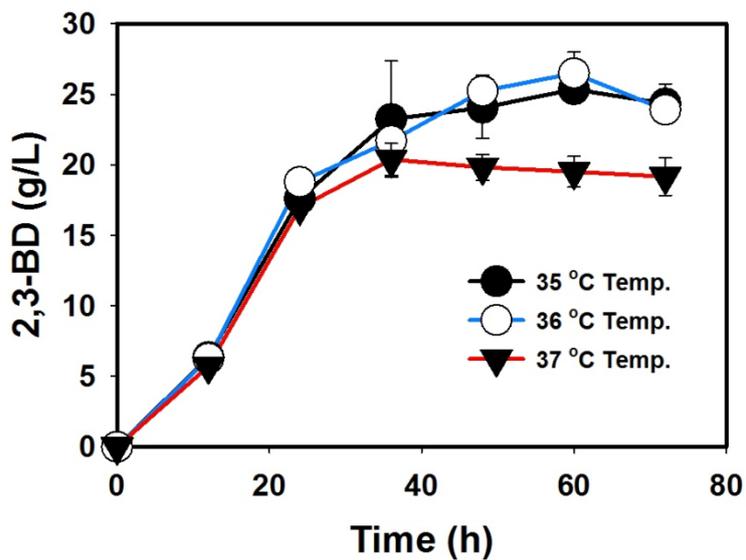


Figure S6. One-factor at a time experiments showing effects of temperature on 2,3-BD production by *P. polymyxa*. Inoculum size, glycerol, yeast extract, tryptone, ammonium sulfate and ammonium acetate were kept at 8%, 10 g/L, 7g/L, 7 g/L, 3g/L and 5 g/L, respectively. Error bars show standard deviations of means ($n = 3$).

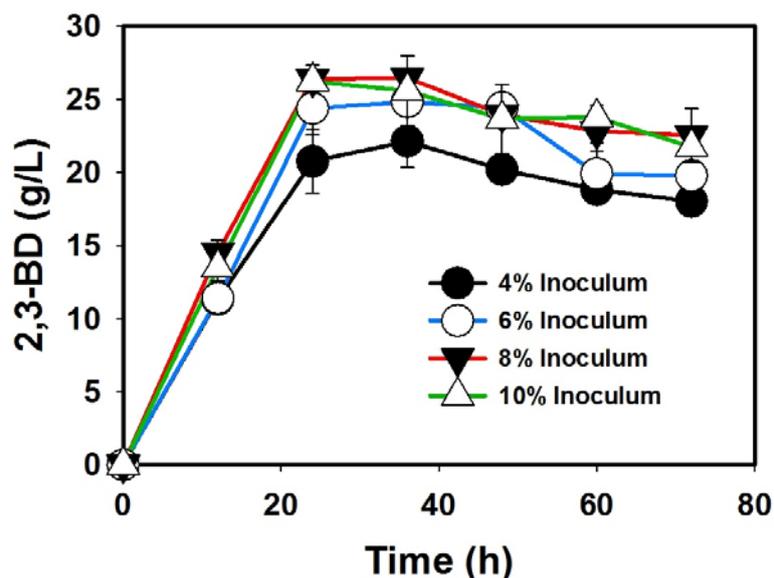


Figure S7. One-factor at a time experiments showing effects of inoculum size on 2,3-BD production by *P. polymyxa*. Temperature, glycerol, yeast extract, tryptone, ammonium sulfate and ammonium acetate were kept at 37 °C, 10 g/L, 7g/L, 7 g/L, 3g/L and 5 g/L, respectively. Error bars show standard deviations of means ($n = 3$).

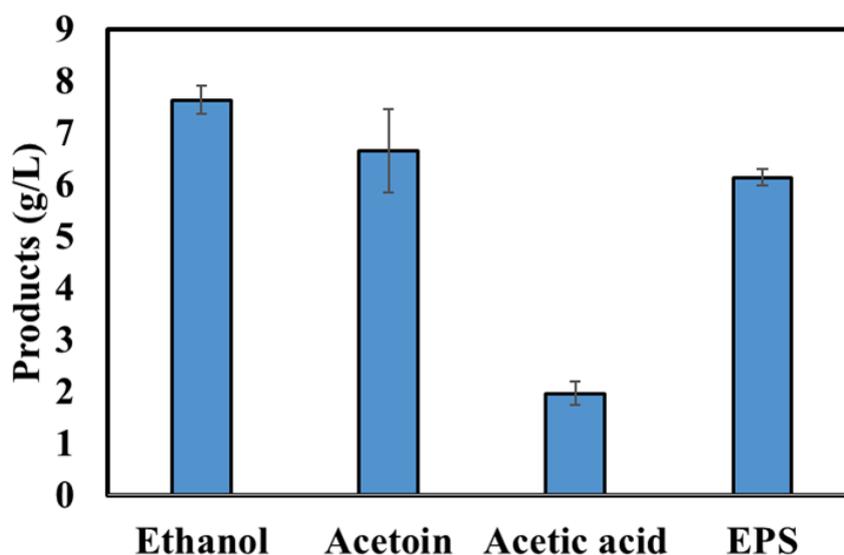


Figure S8. Competing products generated during 2,3-BD fermentation with the non-optimized medium and conditions.