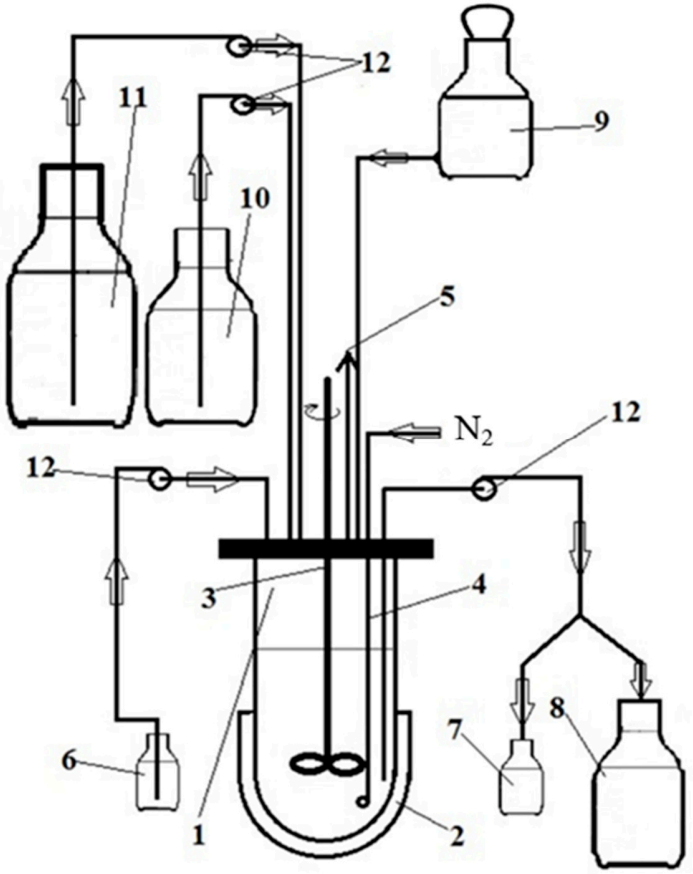

Figure S1. The flow diagram of the descending colon *in vitro* simulation unit. Sterile carbohydrate-free medium from the bottle 11 and oligofructose solution from the bottle 10 are supplied to the bioreactor (1) by peristaltic pumps (12, top) to provide dilution rate of 0.04 h-1 and considered concentration of the carbohydrate (2, 5, 10 and 15 g/L). The continuous outflow of biosuspension is provided with peristaltic pump (12, right) to the bottle 8 and connected with the sampling system (7). The bioreactor vessel (1) is supplied with the heating jacket (2) for the temperature maintaining at 37 °C and the double-deck impeller (3). The pH maintains at 6.8 is carried out using the pH-sensor (not shown) and the system combined the bottle with the titration solution (6) and the automatized peristaltic pump (12, left). The anaerobic conditions are supplied with the nitrogen (extra pure) injected through the sterilizing filter (0,2 μm) and the sparger (4) and removed from the gas exhaust line (5) with the sterilizing filter (0,2 μm). The bioreactor total volume is 5 L and the cultural fluid volume is 2.2 L. All vessels (6, 7, 8, 10, 11) are supplied with seal cups and sterilizing filters (0,2 μm). The inoculation of the unit is carried out through the flask (9) sealed with the plug. The inoculation flask is clamped after usage.

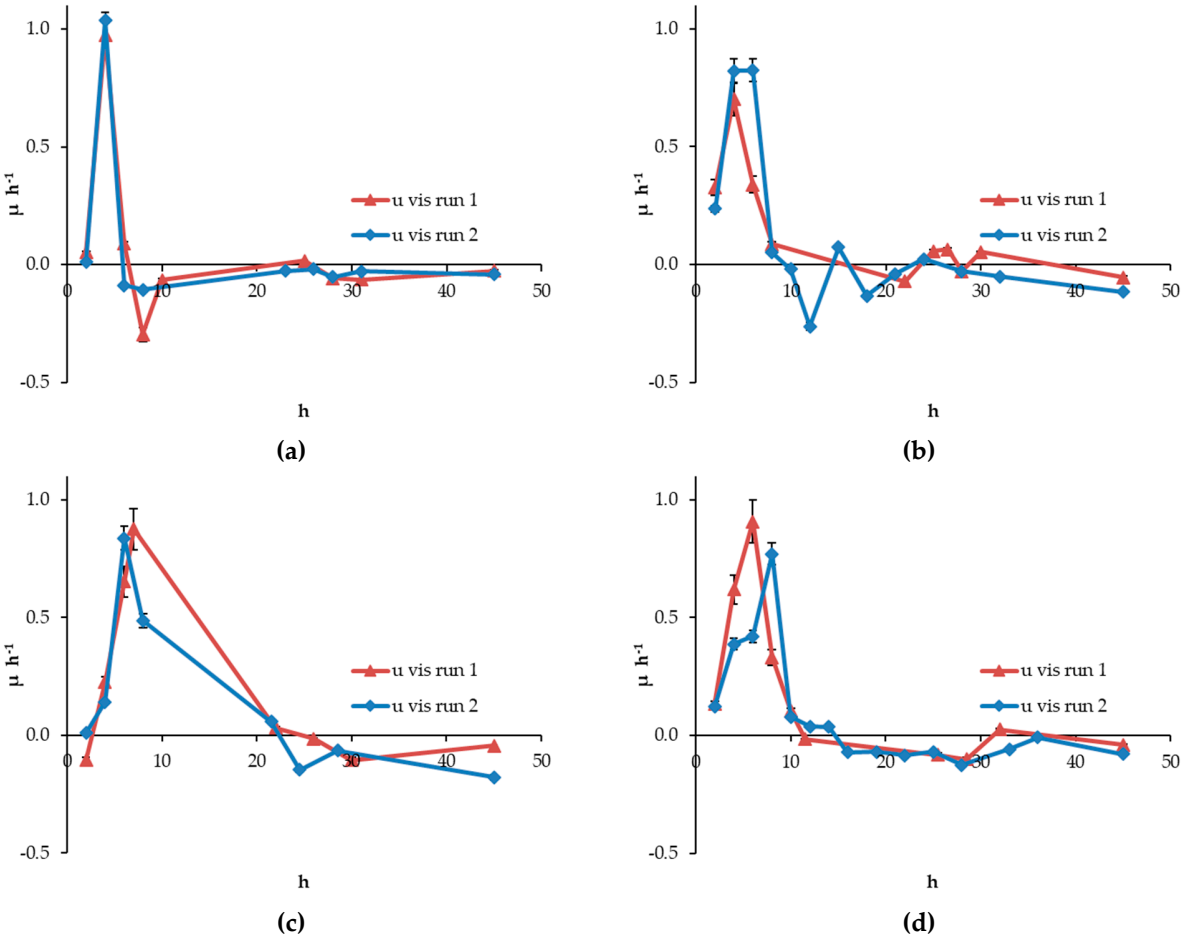

Figure S2. The observed (apparent) specific growth rates calculated by the equation below for bifidobacteria monoculture at OF concentrations of 2 g/L (a); 5 g/L (b); 10 g/L (c); 15 g/L (d)

$$\mu_{vis} = \frac{lnX_{n+1} - lnX_n}{t_{n+1} - t_n} - D$$