

**Figure 1.** - Screw profile used for A) the alkaline pretreatment of barley straw with inlet and outlet positions; B) the biological extrusion of alkali-extruded barley straw with inlet and outlet positions. T: transport effect, M: mixing effect; S: shearing effect.

**Figure 2.** – Particle size distribution (% relative amount) of raw barley straw, extrudate and bioextrudate materials

**Figure 3.** – Sugar production yields (in % of theoretical) and concentrations (in g/l) of glucose (A) and xylose (B) at 0, 3, 6, 8, 20, 24, 48 and 72h of incubation at 50°C of barley straw bioextrudate.