

The Physical Processes Of Digestion

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Introduction - Flow mixing and absorption. The physical problems of extracting nutrients from food items and the possible macroscopic and microscopic solutions. The digestive tube and its limitations. solid to liquid to solid - Methods for evaluating the physical properties of digesta - Particle size- Rheology Viscometry Viscoelastic behaviour Time dependent behaviour - Permeametry - Hindered settling function- Permeability and other measures- Methods for evaluating the relationship between motility and flow of digesta - Solid and liquid phase markers - Reactor mixing - Spatiotemporal mapping - Physical behaviour of fluid digesta- Macroscopic effects Newtonian and non Newtonian behaviour of fluids. Where digesta fit in this system the kinetics of digesta flow Securing efficient absorption from fluids and non-Newtonian fluids, chemical reactor theory and problems - Buoyancy - Backflow from coiled elements- Physical behaviour of solid digesta - The continuum between solids and liquids viscoelasticity securing efficient absorption from fluids and from viscoelastic fluids- Permeability extrusion of the liquid phase - Propulsion and mixing of digesta the interplay between the gut wall and its contents - Tension and stretch receptors in the enteric nervous system - Maintaining the flow of digesta problems of narrowing and expanding - Co-evolution of motility and the physical properties of digesta - Micromixing - Diffusion. Mucus and the unstirred water layer.- Flow in the paravillus space and the crypts.- Tight junctions permeability and fluid flow- Glycocalyceal signalling of shear - The physics of food - What is known about how the physical structure of food interacts with the digestive processes e.g starch granule digestion digestion of proteinaceous aggregates etc (Dr Allan Hardacre NZ Crop and Food)- Flow and microorganisms - Adaptions of micro-organisms to move within digesta and mucus - Glycocalyceal signalling - Messing with the properties of digesta - Adulterating foods with viscoactive substances - Nutraceuticals planning the rate of nutrient release. Modulating lumen pressure - Microencapsulation and adherence to the gut wall EAN/ISBN : 9781441994493 Publisher(s): Springer, Berlin, Springer Science & Business Media Format: ePub/PDF Author(s): Lentle, Roger G. - Janssen, Patrick W.M.

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