Oats are processed to convert them into a palatable and nutritious food. The outer layer of the groat is an important source of protein, neutral lipids, β-glucan, phenolics and niacin, and is sometimes separated from the groat to produce oat bran. The inner endosperm consists of proteins, starch carbohydrate and β-glucan while the germ contains mainly lipids (sterols, fatty acids) and proteins and bioactive peptides. Beyond cleaning and grading and dependent on the exact processing conditions (dehulling, heating, drying and cutting) the final grain can provide metabolisable nutrients of potential benefit to human health. This talk will focus on the effects of consumption of whole grain and/or individual components on relevant metabolic pathways pertinent to the development of non-communicable diseases (obesity, cardio-vascular disease and type 2 diabetes) and examine amounts necessary to exert a potential positive effect.