

activity, hypoglycemic activity, antithrombic effects, inhibition of platelet aggregation and lipoxigenase and tumor inhibition (Huang et al. 1994).

2.2.5 NONDIGESTIBLE CARBOHYDRATES

Several definitions have been given to the term 'dietary fibre'. The most widely accepted is a physiological definition, wherein dietary fibre were considered as vegetable wall residues that were resistant to enzymatic hydrolysis in the small intestine. A chemical description indicates dietary fibre as nonstarch polysaccharides, although, more recently, some authors classify it under resistant starch as a new class. The most commonly used definition was 'oligosaccharides, polysaccharides and their hydrophilic derivatives that cannot be digested by the human digestive enzymes to absorbable products in the upper alimentary tract; this definition includes lignin' (Thebaudin et al. 1997, p. 42). There are three main forms of carbohydrates that are indigestible in the human small intestine: nonstarch polysaccharides (NSP), nondigestible oligosaccharides (NDOs) and resistant starch (RS) (Voragen 1998).

NDOs occur naturally in food raw materials and food products. The most well-known example are fructans (e.g. inulin), which occur in the edible parts of various plant foods like onions, artichokes, bananas, rye, chicory, leek, garlic, barley and yacon (Voragen 1998). Galactosyl sucroses (raffinose and stachyose) are present in soybeans and other leguminous seeds, while xylooligosaccharides occur in bamboo shoots. NDOs are generated during processing in some foods. The NDOs have been described as prebiotics (Crittenden and Playne 1996). Prebiotics are nondigestible food ingredients which positively affect the host by selectively stimulating the growth and/or activity of one or a few number of beneficial bacterial species already resident in the colon (Gibson and Roberfroid 1995). This is why, the resistant starches, although considered as fibre, are not necessarily prebiotics.

Dietary fibre have several established physiological effects: modulation of glucose absorption, regulation of gastrointestinal passage time, faecal bulking, acidification of colonic material and control of cholesterol bioavailability. Prebiotics, on the other hand, specifically alter the colonic microbiota and modulate hepatic lipogenesis (Crittenden and Playne 1996; Roberfroid 1996). A balanced intestinal microflora permits improved bowel regularity, reduction of bacteria, protection against a range of toxins and increased absorption of nutrients.

Lignans are diphenols that are minor components associated with dietary fibre. Sources of dietary lignans are oilseeds, cereal grains, vegetables, fruits and legumes. Flaxseed and sesame seeds have been recognized as the richest sources of these compounds (Thompson et al. 1991; Coulman et al. 2005). Plant lignans, once ingested, are converted into enterolactone and enterodiol by bacteria in the large intestine, which are known as mammalian lignans, as they have been found only in mammals (Crosby 2005). Mammalian lignans are associated with the reduced risk of CVD and cancer.

2.2.6 TERPENES

The term terpenes originate from turpentine (*Balsamum terebinthinae*). Turpentine, also known as the 'resin of pine trees', is the viscous, pleasantly smelling balsam