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## **FAT COMPOSITION DEMYSTIFIED – WHAT IS THE DIFFERENCE BETWEEN SATURATED, UNSATURATED AND POLYUNSATURATED FAT (FATTY ACID) MEAN?**

Fats are made up of fatty acids which contain chains of carbon atoms that have branches coming off the chain. The branches are made up of hydrogen and oxygen atoms. The chains of carbon can vary in length from a 2 carbon chain fat, to upwards of 30 carbons. Carbon atoms (chemical symbol C) have space for 4 bonds or “docking stations” that they can use to attach to other atoms. Carbon atoms may be joined to each other by either single or double bonds i.e. either using one (C-C) or two of these docking stations (C=C). We hear all the time about saturated and unsaturated fats, and the difference between these two is that in saturated fats, all of the carbons are held together in the chain by single bonds (C-C). In unsaturated fats one or more of the carbons in the chain are held together with a double bond (C=C). If they have more than one of these double bond connections they are called a polyunsaturated fatty acids (PUFA’s).

Fats are used for all sorts of functions within the body, for example cell membranes and absorption of fat soluble vitamins. Like us the horse can make a lot of the different fats it needs by taking fat provided in the diet and combining it to components taken from proteins and carbohydrates to make a new fat. However, the horse can only make saturated fats (those with single bonded carbon chains) because it lacks the enzymes necessary to make/insert double bonds into the carbon chain. For some body functions unsaturated fats are required, especially the polyunsaturated fats which can not be created from other dietary components. Therefore certain polyunsaturated fats are known as Essential Fatty Acids (EFA’s). The most important of these EFA’s are linolenic and arachidonic acids (both omega-6 fatty acids) and linoleic acids (an omega-3 fatty acid). For those who are wondering, the omega-3 and omega-6 notation refers to where the double carbon bonds are in the chain. 😊

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