



Determination of Fatty Acids



Fatty acids are long-chain hydrocarbons that can be separated into four categories: saturated, mono-unsaturated, polyunsaturated, and trans fats.

More than 20 types of fatty acids are found in foods; sources of fatty acids include fruits, vegetable oils, seeds, nuts, animal fats, and fish oils.

Essential fatty acids, such as omega-3 fatty acids, serve important cellular functions. They are a necessary part of the human diet because the body has no biochemical pathway to produce these molecules on its own.

Neutron performs analysis for the most common fatty acids listed in the following tables.

SATURATED	
Butirric acid (C4:0)	Pentadecanoic acid (C15:0)
Capronic acid (C6:0)	14-methyl pentadecanoic acid (C16:0)
Enanthic acid (C7:0)	Palmitic acid (C16:0)
Caprylic acid (C8:0)	15-methyl hexadecanoic acid (C17:0)
Caprinic acid (C10:0)	14-methyl hexadecanoic acid (C17:0)
Lauric acid (C12:0)	Heptadecanoic acid (C17:0)
Tridecanoic acid (C13:0)	Stearic acid (C18:0)
12-methyl tridecanoic acid (C14:0)	Arachic acid (C20:0)
Myristic acid (C14:0)	Eneicosanoic acid (C21:0)
13-methyltetradecanoic acid (C15:0)	Behenic acid (C22:0)
12-methyltetradecanoic acid (C15:0)	Lignoceric acid (C24:0)
MONOUNSATURATED	
Decenoic acid (C10:1)	Heptadecenoic acid (C17:1)
Dodecenoic acid (C12:1)	Oleic acid, including geometric and position isomers (C18:1)
Myristoleic acid (C14:1)	11-eicosenoic acid (C20:1)
10-pentadecenoic acid (C15:1)	Erucic acid (C22:1)
Palmitoleic acid, including geometric and position isomers (C16:1)	Nervonic acid (C24:1)
POLYUNSATURATED	
Linoleic acid, including geometric and position isomers (C18:2)	Arachidonic acid (C20:4)
Linolenic acid, including geometric and position isomer (C18:3)	Docosadienoic acid (C22:2)
Stearidonic acid (C18:4)	Eicosapentaenoic acid (EPA) (C20:5)
11,14-eicosadienoic (C20:2)	Docosatetraenoic acid (C22:4)
Dihomo gamma linolenic acid (DHGLA) (C20:3)	Docosapentaenoic acid (DPA) (C22:5)
11,14,17-eicoesatrienoic acid (C20:3)	Docosahexaenoic acid (DHA) (C22:6)

OTHER FATTY ACIDS
TRANS-UNSATURATED FATTY ACIDS on FATS and OILS (values expressed in % composition)
trans-unsaturated acids, sum
trans-linoleic acids
trans-linoleic and trans-linolenic acids
trans-oleic acids
SINGLE DETERMINATIONS - all other matrices
trans-unsaturated fatty acids (value expressed on the sample as it is)
trans-unsaturated fatty acids (value expressed on fat content)
CLA GROUP (LINOLEIC ACIDS CONJUGATES)
Conjugated Linoleic Acid isomers (CLA) (sum of isomers 9 cis- 11 trans, 10 trans-12 cis, 9 cis-11 cis, 9 trans-11 trans)
OMEGA 3 ESSENTIAL FATTY ACIDS
Alpha linolenic acid (C18:3 omega 3)
Stearidonic acid (C18:4 omega 3)
11,14,17-eicosatrienoic acid (C20:3 omega 3)
Eicosapentaenoic acid (EPA) (C20:5 omega 3)
Docosapentaenoic acid (DPA) (C22:5 omega 3)
Docosahexaenoic acid (DHA) (C22:6 omega 3)
OMEGA 6 ESSENTIAL FATTY ACIDS
Linoleic acid (C18:2 omega 6)
Gamma linolenic acid (C18:3 omega 6)
11,14-eicosadienoic acid (C20:2 omega 6)
Dihomo gamma linolenic acid (DHGLA) (C20:3 omega 6)
Arachidonic acid (C20:4 omega 6)
Docosadienoic acid (C22:2 omega 6)
Docosatetraenoic acid (C22:4 omega 6)
OMEGA 7
Palmitoleic acid (C16:1 omega 7)
cis-Vaccenic acid (C18:1 omega 7)
OMEGA 9
Oleic acid (C18:1 omega 9)
11-eicosenoic acid (C20:1 omega 9)
Erucic acid (C22:1 omega 9)
Nervonic acid (C24:1 omega 9)
NUTRITIONAL LABEL (values expressed on the sample as it is)
Saturated fatty acids
Monounsaturated fatty acids
Polyunsaturated fatty acids
Saturated fats
Monounsaturated fats
Polyunsaturated fats