Changes in fat and fatty acid content of soybean (Glycine max) seeds during germination

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Soybean (*Glycine max*) has been considered an important world crop because it contains about 20 % fat with a high proportion of essential fatty acids such as linoleic and linolenic acids. Several studies have demonstrated that dietary essential fatty acids have many health benefits. The main objective of this experiment is to examine the changes in essential fatty acids (linoleic and linolenic acid) contents with increasing duration of germination time. Changes in fat % and other fatty acid contents with time were also observed. Fat and major fatty acids (like palmitic, stearic, oleic, linoleic and linolenic acid) contents of the germinated soybean seed samples and ungerminated sample of variety Pb-1 were determined along with germination period. (24, 48 and 72 hours) Fat and fatty acid were extracted by Soxhlet method and fatty acids were estimated by Gas Chromatographic (GC) method.

Fat content of variety Pb-1 seeds progressively and significantly decreased with increasing duration of germination time (24, 48 and 72 hours) when compared to ungerminated seeds. The percentage loss of fat in seeds after 72 hours of germination is 8%. Soybean seeds germinated for 48 hours had the highest amount of palmitic acid (14.3%) compared to others. Stearic acid content increased in seeds germinated for 24 hours (4.3%) when compared to control and then declined. When compared to ungerminated seeds (27.2%) oleic acid content, declined during germination. The essential fatty acid content of the germinated soybean seeds increased with germination time and the highest linoleic (53.6%) and linolenic acid (9.3%) content were observed after 72 hours of germination. The percentage increase of linoleic and linolenic acid contents in seeds after 72 hours of germination when compared to control is 6 and 40 % respectively.