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REGULAR ARTICLE

REFLECT OF UTILIZATION DIFFERENT LIPIDS LEVEL ON AMINO AND FATTY ACIDS PROFILE OF BROILER'S (ROSS-308) LIVER

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ABSTRACT

In this work we investigated the effect of utilization two type of fat, saturated fat(SF) representative by animal fat as a 5% packed fat (PF) in control group (C) and unsturated fat(USF) repecentive by2.5% sunflower oil (SUN) mixed with 2.5% PF as treatment1(T1), another USF 2.5% of rapeseed oil (RO) is used mixed with 2.5%PF as treatment 2 (T2) and last treatment (T3) is mixed 2.5% PF+1.25 SUN+1.25 RO. Insignificat diffrences ($P>0.01$) for all amino acids except cystine wassignificant ($P<0.01$) and high value found in C group (15.42). High value of tosal SF found in C group (44.82%).

Keywords: Broiler (Ross-308), Amino and Fatty Acids, liver profile and human health

INTRODUCTION

A major reason for the current interest in dietary fat is related to the evidence of linking high fat intakes, especially saturated fats, to coronary heart disease (CHD). High levels of blood cholesterol, in particular LDL cholesterol, constitute a major risk factor in

CHD. Interest in dietary fat and CHD was centred primarily on saturated and polyunsaturated fatty acids until 1985, when **Mattson and Grundy (1985)** reported, that monounsaturated fatty acids, namely oleic acid, were as effective as PUFA in reducing plasma total and LDL cholesterol levels. These observations coincided with the relatively low incidence of CHD observed among populations consuming the so-called Mediterranean diet, which is characterized by a high intake of fat but primarily from olive oil. The prevailing theory at the time argued, that saturated fatty acids raised blood cholesterol, PUFA lowered blood cholesterol and MUFAs were neutral, they neither raised nor lowered blood cholesterol (**Abdel-Hakim *et al.*, 1982**). The demonstration showed that vegetable oils with high concentration in oleic acid were effective in reducing blood cholesterol (**Vilchez *et al.*, 1991**). Transfatty acids are produced, when fats and oils are hydrogenated (hardened) for use in the manufacture of margarines and derivative. The report by **Mensink and Katan (1990)** that high intakes of trans fatty acids not only increased plasma LDL cholesterol levels, but lowered plasma high density lipoprotein (HDL) cholesterol levels, triggered an intense debate on the physiological effects of hydrogenated fats, particularly in relation to CHD. The study also brought into question the wisdom of replacing saturated fats with hydrogenated products.

At studies with an experimental (rat) model, **McLennan *et al.* (1988)** have shown, that diets enriched in long chain omega-3 fatty acids (viz., eicospentaenoic acid EPA and docosahexaenoic acid (DHA) protected against induced arrhythmias. Sunflower oil, a rich source of omega-6 fatty acids, also provided partial protection against induced arrhythmias in the rat model. Likewise, arrhythmic effects were observed when experimental animals were fed diets containing canola oil **(McLennan and Dallimore, 1995)**. By contrast, feeding diets containing olive oil, soybean oil and sunflower oil did not significantly decrease the incidence of induced cardiac arrhythmia in the experimental animals in this study. These findings suggest that the balance between the dietary omega-3 and omega-6 fatty acid content may be important, because the soybean oil diet provided essentially the same level of α-linolenic acid as the canola oil diet, but 2.5 times as much linoleic acid. Overall, all for amino acids (AA) diets yielded high-quality breast and thigh meat, whereas the high amino acids diet yielded broilers with excellent live performance, carcass traits, and meat quality.

The objective of our study was to find influence of diet include different type of lipid on liver content for fatty and amino acids which also reflect on human health.

MATERIAL AND METHODS

Experimental material and conditions

The experiment was realized at the test station poultry of Slovak Agricultural University in Vígľaš; research farm in Kolíňay. on feeding of Ross-308 chicken hybrid combination. The experiment enrolled 800 pieces of one day chickens hybrid combination and were created 4 groups of animals: control (C) and three experimental (I, II and III) of 50 pcs of chickens. Custom feeding insisted 42 days. Chickens are housed in the experimental procedure under the same technological conditions. Viewed climatic variables must meet the criteria for the type and category of animals. Other technology systems (ventilation, lighting intensity, length of day light) implemented as recommended by the fattening technology applicable to a particular hybrid chicken included in the experiment.

The feed formulation and feeding periods

Isocaloric and isonitrogenous diets formulated by the use of the program (G7 2000) are based on least cost design.

Experimental intervention

The fat added to complete feed mixtures manufacturer in different concentration at all the groups, group one (C) 5% animal fat under name commercial packed fat, group two (T1) 2 .5% packed fat + 2 .5% Sunflower oil, group three (T2) 2.5% packed fat +2.5% rapeseed oiland group four was 2.5%packed fat +1.25 sunflower oil -1.25 rapeseedoil In 800 Broiler line Ross308. Periods of breeding was 0-7 days for prestarter, 8-17 days for starter, 18-34 for grower, 35-41 for finisher and at 42 days were slaughtered. The laboratory analysis as performed done in Animal Nutrition Department of Slovakia Agriculture University.

Determination of Amino acids

Poultry have a nutritional requirement not for total protein, but rather for essential amino acids that are contained in their dietary crude protein **(Wiseman et al., 1991).** Ion exchange chromatography method used and amino acid analyzer (AAA 400 by INGOS,

Pragh, Czech R.) applied for determination total amino acids. ISO 13903 (2005) standard method was applied. The brief procedure of AAs analysis practiced after made leufilization.

Calculation of results

The area of the sample and standard peaks is measured for each individual amino acid and the amount, in g amino acid per kg sample, is calculated.

g amino acid per kg sample= (A × E × MW × F) / B × W × 1000

A = peak area, hydrolysate or extract

B = peak area, calibration standard solution

MW= molecular weight of the amino acid being determined

E = concentration of standard in lmol.ml^{-1}

F= ml total hydrolyzed or ml calculated total dilution volume of extract.

W = sample weight (g) (corrected to original weight if dried or defatted)

Cystine and cysteine are both determined as cysteic acid in hydrolysates of oxidized sample, but calculated as cystine ($C_6H_{12}N_2O_4S_2$, MW 240.30 by using MW 120.15 (= 0.5× 240.30). Methionine is determined as methionine sulphone in hydrolysates of oxidized sample, but calculated as methionine by using MW of methionine: 149.21. Table1,2,3and 4 observed typs of amino acids inclued of diet in diffrent period breeding.

Table 1 Amino acid composition of experimental diets at pre-starter period

AA /g/kg// number of sample	Groups			
	C	T1	T2	T3
Aspartic acid	24.5471	24.0951	24.6929	23.7873
Threonine	9.6072	9.4471	9.5495	9.3289
Serine	12.1335	11.7077	11.5835	11.4010
Glutamic acid	42.4640	41.8444	42.4193	41.1279
Proline	15.7576	15.6834	15.7383	15.2599
Glycine	10.7657	10.5844	10.9076	10.5402
Alanine	11.5427	11.3523	11.6334	11.2666
Valine	11.7977	11.8218	12.4688	11.9335
Isoleucine	10.4194	10.3590	10.7867	10.4705
Leucine	20.1486	19.6991	20.1239	19.5414

Tyrosine	8.2989	7.9666	8.0627	7.6588
Phenylalanine	11.9520	11.6006	12.0229	11.3083
Histidine	6.9640	7.0376	7.1589	6.8313
Lysine	15.3967	15.2052	15.6159	15.0999
Arginine	18.9042	18.5267	19.1471	18.7073
Cystine	4.8720	4.8328	4.9510	4.8203
Methionine	8.1528	8.4175	7.9896	8.1988
Sum of amino acids /g/kg/	243.7241	240.1813	244.8520	237.2819
Nitrogen compounds %	26.39	25.71	26.01	25.84
Dry matter %	100.00	100.00	100.00	100.00

Table 2 Amino acid composition of experimental diets at starter period

AA /g/kg// number of sample	Groups			
	C	T1	T2	T3
Aspartic acid	21.9315	21.7423	22.4633	21.7657
Threonine	8.6535	8.5682	8.5954	8.4456
Serine	11.1141	10.7663	11.1300	10.9280
Glutamic acid	38.7459	37.6346	39.5115	39.4864
Proline	14.6884	14.3658	14.3819	15.0480
Glycine	9.7056	9.9081	9.7844	9.9529
Alanine	10.6366	10.8248	10.5520	10.9475
Valine	10.3165	10.3926	10.7814	11.0031
Isoleucine	8.9867	8.9526	9.3002	9.4500
Leucine	18.1650	17.7596	17.6074	18.2793
Tyrosine	7.4586	7.1670	7.2008	7.4014
Phenylalanine	10.7053	10.3702	10.6981	10.6664
Histidine	6.4783	6.4209	6.5998	6.3889
Lysine	13.8183	14.3105	13.9910	14.0663
Arginine	17.0039	16.6456	17.1946	17.3692
Cystine	4.8869	4.4389	4.7948	4.6403
Methionine	7.7064	8.0018	7.3195	7.3728
Sum of amino acids /g/kg	221.0017	218.2698	221.9061	223.2117
Nitrogen compounds %	24.41	23.83	24.22	24.32
Dry matter %	100.00	100.00	100.00	100.00

Table 3 Amino acid composition of experimental diets at grower period

AA /g/kg// number of sample	Groups			
	C	T1	T2	T3
Aspartic acid	18.9196	19.9725	19.1730	20.0445
Threonine	7.2279	7.5950	7.2885	7.8521
Serine	9.4062	10.1362	9.9514	10.3714
Glutamic acid	36.1336	38.5740	36.3258	37.7272
Proline	13.4662	14.7115	13.7663	14.6419
Glycine	8.1069	8.2875	8.0711	8.5442
Alanine	8.9546	8.8899	8.5821	9.7122
Valine	9.5198	9.7194	8.6623	9.2000
Isoleucine	8.3211	8.7468	7.6103	7.9081
Leucine	15.9665	16.5400	15.8410	16.3266
Tyrosine	6.4714	6.0743	6.2704	6.3297
Phenylalanine	9.6246	9.1545	9.2991	9.5772
Histidine	5.3940	5.6948	5.6539	5.7482
Lysine	11.5903	11.8800	11.3901	11.9752
Arginine	15.1807	15.7846	14.1481	15.3788
Cystine	4.4644	4.7923	4.5530	4.4974
Methionine	6.2250	6.6193	6.2470	6.1119
Sum of amino acids /g/kg/	194.9727	203.1728	192.8335	201.9464
Nitrogen compounds	21.32	22.11	21.41	21.56
Dry matter %	100.00	100.00	100.00	100.00

Table 4 Amino acid composition of experimental diets at finisher period

AA /g/kg// number of sample	Groups			
	C	T1	T2	T3
Aspartic acid	16.6571	16.4708	16.5219	16.5773
Threonine	6.9652	6.7473	6.7330	6.7211
Serine	9.3304	8.9485	8.8372	9.1095
Glutamic acid	36.5100	35.7464	36.1464	36.6481
Proline	14.2009	13.7724	14.3342	14.5686
Glycine	7.4823	7.4214	7.4387	7.4271
Alanine	7.6911	7.9591	8.1014	7.8677
Valine	8.4633	8.4441	8.4977	8.4884
Isoleucine	7.2528	7.1176	7.2370	7.2309
Leucine	14.7320	14.3242	14.6560	14.8095
Tyrosine	5.6940	5.5822	5.7593	5.6766
Phenylalanine	8.6121	8.6267	8.9097	8.7093
Histidine	5.0525	4.9717	5.1111	5.1037
Lysine	10.6475	10.4465	10.6717	10.5498
Arginine	13.2775	12.8388	13.1952	13.2917
Cystine	4.3893	4.3717	4.3626	4.3323
Methionine	6.6069	6.8336	7.0821	6.6953
Sum of amino acids /g/kg/	183.5649	180.6229	183.5953	183.8068
Nitrogen compounds /% /	19.83	19.98	19.73	19.87
Dry matter /%/	100.00	100.00	100.00	100.00

Determination of Crude Fat and Fatty Acids Methyl Esters (FAME)

Total fat content of meat and liver was determined by application of ISO- 11085 (2008) standard method. Fatty acids analysis was prepared by modification method of ISO/ TS 17764-1 (2002). Table 5 and 6 observed inclued of fatty acids composion in diet of diffrent periods breedind.

Table 5 Fatty acid composition of diets during pre-starter and starter periods

Fatty Acids	Groups			
	C	T1	T2	T3
	% of Crud Fat in Pre-starter Period			
Lauric / C12: 0	0.12±005 [b]	0.11±0.01 [b]	0.12±0.01 [b]	0.08±0.003 [a]
Myristic/C14:0	1.04±0.01 [c]	0.77±0.01 [b]	0.99±0.02 [b]	1.01±0.01 [b]
Palmatic/C16:0	38.03±0.30 [c]	34.88±0.44 [b]	36.12±0.81 [bc]	30.14±1.70 [a]
Palmitolic/C16:7	8.27±0.28 [a]	10.97±0.10 [b]	8.66±0.67 [a]	9.13±0.51 [a]
Steric/C18:9	42.31±0.22 [b]	14.24±0.64 [a]	42.38±0.17 [b]	42.00±0.09 [b]
Oleic/C18:9	8.51±0.17 [a]	11.16±0.94 [b]	9.29±0.29 [a]	8.96±0.69 [a]
Linolic/C18:6	17.43±2.01	14.72±0.12	16.83±1.72	17.57±0.46
Linolenic/ C18:6,9	0.02±0.01 [a]	0.10±0.01 [a]	0.75±0.08 [b]	0.80±0.04 [b]
Arachidic/C20:0	0.47±0.03	0.51±0.01	0.57±0.15	0.52±0.01
Arachidonic/C20:5,8,11,14	0.10±0.01 [b]	0.09±0.01 [b]	0.06±0.02 [b]	0.001±0.04 [a]
Behenic/C22:0	0.92±0.01 [b]	0.97±0.04 [b]	0.85±0.03 [a]	0.85±0.03 [a]
	% of Crud Fat in starter Period			
Lauric / C12: 0	0.16±0.004 [b]	0.14±0.01 [b]	0.15±0.01 [b]	0.11±0.003 [a]
Myristic/C14:0	0.96±0.01 [c]	0.68±0.01 [b]	0.90±0.02 [bc]	0.92±0.01 [a]
Palmatic/C16:0	29.45±0.30 [c]	26.30±0.44 [b]	27.53±0.81 [bc]	21.55±1.70 [a]
Palmitolic/C16:7	8.58±0.28 [a]	11.26±0.10 [b]	8.96±0.67 [a]	9.43±0.51 [a]
Steric/C18:9	26.69±0.22 [b]	25.62±0.64 [a]	26.73±0.17 [b]	26.38±0.09 [b]
Oleic/C18:9	17.77±0.17 [a]	20.42±0.94 [b]	18.54±0.29 [a]	18.22±0.69 [a]
Linolic/C18:6	32.78±2.01	30.07±0.12	32.18±1.71	32.92±0.46
Linolenic/ C18:6,9	0.52±0.004 [a]	0.59±0.01 [a]	1.24±0.08 [b]	1.29±0.04 [b]
Arachidic/C20:0	0.38±0.03	0.42±0.005	0.50±0.19	0.44±0.005
Arachidonic/C20:5,8,11,14	0.12±0.005 [b]	0.11±0.005 [b]	0.08±0.03 [b]	0.03±0.03 [a]
Behenic/C22:0	0.35±0.01 [b]	0.40±0.03 [b]	0.29±0.03 [a]	0.24±0.02 [a]

Table 6 Fatty acid composition of diets during grower and finisher periods

Fatty Acids	Groups			
	C	T1	T2	T3
	% of Crud Fat in grower Period			
Lauric / C12: 0	0.11±0.02^{a}	0.12±0.01^{b}	0.12±0.01^{b}	0.09±0.002^{a}
Myristic/C14:0	0.74±0.01^{c}	0.46±0.01^{a}	0.69±0.02^{b}	0.70±0.01^{b}
Palmatic/C16:0	12.44±0.30^{c}	36.29±0.44^{b}	37.53±0.81^{bc}	31.55±1.70^{a}
Palmitolic/C16:7	9.28±0.28^{a}	11.96±0.67^{b}	9.66±0.67^{a}	10.13±0.51^{a}
Steric/C18:9	45.19±0.22^{b}	44.122±0.64^{a}	45.24±0.17^{b}	44.88±0.09^{b}
Oleic/C18:9	7.64±0.17^{a}	10.30±0.94^{b}	8.42±0.29^{a}	8.10±0.69^{a}
Linolic/C18:6	13.10±1.84	11.90±0.12	14.01±1.72	14.75±0.46
Linolenic/ C18:6,9	0.02±0.004^{a}	0.10±0.01^{a}	0.75±0.08^{b}	0.79±0.04^{b}
Arachidic/C20:0	0.49±0.04	0.52±0.005	0.58±0.14	0.54±0.01
Arachidonic/C20:5,8,11,14	0.12±0.03^{b}	0.12±0.01^{b}	0.09±0.03^{ab}	0.04±0.03^{a}
Behenic/C22:0	0.37±0.08^{ab}	0.45±0.04^{b}	0.33±0.03^{a}	0.28±0.02^{a}
	% of Crud Fat in finisherPeriod			
Lauric / C12: 0	0.16±0.004^{b}	0.14±0.01^{b}	0.15±0.01^{b}	0.11±0.003^{a}
Myristic/C14:0	0.75±0.01^{c}	0.47±0.01^{a}	0.70±0.02^{b}	0.71±0.01^{b}
Palmatic/C16:0	38.47±0.30^{c}	35.32±0.44^{b}	36.56±0.81^{ab}	36.57±1.70^{a}
Palmitolic/C16:7	9.01±0.28^{a}	11.70±0.10^{b}	9.12±0.67^{a}	9.87±0.51^{a}
Steric/C18:9	35.15±5.36	34.97±4.98	35.08±5.20	35.02±5.09
Oleic/C18:9	42.35±0.17^{a}	45.00±0.94^{b}	43.13±0.29^{a}	42.80±0.69^{a}
Linolic/C18:6	17.47±2.01	14.76±0.12	16.87±1.72	17.61±0.46
Linolenic/ C18:6,9	0.03±0.004^{a}	0.11±0.01^{a}	0.76±0.08^{b}	0.80±0.04^{b}
Arachidic/C20:0	0.52±0.03	0.56±0.005	0.52±0.03	0.57±0.005
Arachidonic/C20:5,8,11,14	0.10±0.005^{b}	0.09±0.005^{b}	0.06±0.02^{b}	0.01±0.04^{a}
Behenic/C22:0	0.33±0.005^{b}	0.38±0.04^{b}	0.26±0.03^{a}	0.22±0.02^{a}

Slaughter outputs

The liver was immediately removed from hot carcasses, packed in plastic bags and stored in liquid nitrogen until the time of analysi (Picture 1).

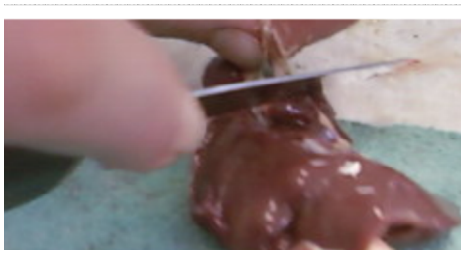

Figure 1 Removed of liver immediatly after slaughtering from carcass

Statistical analysis

For the statistical design and data analyses, complete random design an experiment with 4 treatments were determined. Data in all experiments were subjected to ANOVA procedures appropriate for a completely randomized design and the significance of differences between the means estimated using Duncan test (Duncan's new multiple range test). Probability level of was Significance in all comparisons with chemical parameters which $P<0.01$ was considered. Values in percentage were subjected to transformation of Arc sin v100. All statistical analyses were performed using the software SPSS 17.5 for Windows® **(SPSS Inc., Chicago, IL).**

RESULTS AND DISCUSSION

Effects of diet on amino acid profile of broilers liver

Broiler meat is one of the principal sources to fill the genuine gaps of the animal protein and can play leading role in providing balanced diet **(Alam and Khan, 2000).**

Data from Table 7 pointed there were insignificant differences among all treatment with all of type amino acids expect Cyctine was significant differences ($P<0.01$) and high value found in group control (15.42g.kg^{-1}).

Table 7 Effects of diet on amino acid profile of broilers liver

AA /g/kg// number of sample	Groups			
	C	T1	T2	T3
Aspartic acid	62.29±3.54	61.59±1.96	62.913±1.69	64.58±0.90
Threonine	32.07±2.40	31.00±1.24	31.47±0.84	32.54±0.58
Serine	31.56±2.72	31.25±1.19	32.82±1.08	33.62±0.50
Glutamic acid	77.44±4.23	75.77±2.64	77.08±1.66	77.37±097
Proline	31.10±4.39	32.72±2.57	31.91±1.39	32.78±0.67
Glycine	34.75±1.34	34.5±3.38	34.37±1.18	33.80±0.67
Alanine	42.70±2.75	42.13±2.43	42.27±1.03	42.99±0.88
Valine	39.64±1.69	37.80±3.98	35.57±0.74	35.57±0.74
Isoleucine	29.62±1.47	28.31±3.31	27.47±0.63	27.81±0.25
Leucine	60.89±2.40	59.09±4.10	59.67±1.19	60.68±0.90
Tyrosine	26.14±1.94	25.88±1.92	24.65±1.15	25.65±1.27
Phenylalanine	34.12±1.86	33.13±1.73	33.24±0.68	34.05±0.32
Histidine	19.33±1.37	18.96±0.79	19.06±0.56	19.21±0.52
Lysine	50.77±2.61	49.41±3.06	48.37±1.18	50.40±0.98
Arginine	45.73±2.85	44.24±2.53	44.80±0.49	44.70±0.49
Cystine	$15.42±0.58^{b}$	$14.70±0.42^{ab}$	$14.46±0.24^{ab}$	$13.95±0.66^{a}$
Methionine	18.01±0.97	17.34±0.51	16.90±0.07	17.73±0.50

^{a,b} means with different superscript within row are significantly different (P< 0.01)

*Values are $\bar{x}$ ± Std. Deviation of 50 chickens

This can be attributing to function of the liver to conver type of AA from carboxyde group and make bond with group of amide to synthesis of AA **(Hesabi *et al.*, 2008)**. Therefor increase the level of AA in liver compare with the level in diet (tables precent 1,2, 3 and 4).

This result agree with result of **Aletor *et al.* (2000)**.

Effect of diets on the fatty acids profile of liver

An increased production of cholesterol and other repair factors in the liver increases the levels of these molecules in the bloodstream and, over time, renders them risk factors for cardiovascular disease **(Rath, 1993)**. Table 8 and 9 observed there were insignificant

differences (P>0.01) for lauric, myristic palmitic, oleic, aracidic, arachidonic and behenic acids.

Table 8 Effect diets on fatty acid compositions of liver are in experimental broilers

Fatty Acids	Groups			
	C	T1	T2	T3
	Fatty acid composition (% of total FA)			
Lauric / C12: 0	0.09±0.04	0.13±0.13	0.04±0.03	0.06±0.05
Myristic/C14:0	0.51±0.12	0.45±0.16	0.43±0.12	0.61±0.16
Palmatic/C16:0	30.25±1.26	30.03±0.68	26.85±4.31	26.00±3.08
Palmitolic/C16:7	13.33±1.42^{b}	10.98±1.28^{b}	10.18±2.07^{a}	7.69±0.58^{a}
Steric/C18:9	14.44±0.92^{b}	13.17±0.53^{ab}	11.29±1.37^{a}	11.14±1.36^{a}
Oleic/C18:9	19.27±2.28	19.39±0.84	18.31±0.53	19.50±1.38
Linolic/C18:6	13.55±0.37^{c}	11.75±1.11^{bc}	9.93±1.02^{ab}	9.20±0.76^{a}
Linolenic/ C18:6,9	0.06±0.06^{a}	0.43±0.25^{b}	0.56±0.08^{b}	0.65±0.02^{b}
Arachidic/C20:0	0.06±0.04	0.08±0.01	0.056±0.03	0.06±0.03
Arachidonic/C20:5,8,11,14	0.20±0.02	0.17±0.03	0.23±0.04	0.24±0.04
Behenic/C22:0	0.07±0.01	0.12±0.02	0.07±0.03	0.06±0.04

^{a,b} means with different superscript within row are significantly different (P< 0.01)

*Values are $\bar{x}$ ± Std. Deviation of 50 chickens

Table 9 Calculation of different profiles of the fatty acids in experimental groups of liver's

Groups	Total SFA[1] %	Total UFA[2] %	UFA/SFA	Total MUFA[3] %	Total PUFA[4] %	PUFA/MUFA	MUFA/SFA
C	44.82	46.41	1.04	46.15	0.26	0.006	1.030
T1	43.4	42.72	0.98	42.12	0.6	0.014	0.971
T2	38.266	39.21	1.02	38.42	0.79	0.021	1.004
T3	37.26	37.28	1.00	36.39	0.89	0.024	0.977

[1] SFA – saturated fatty acids; [2] MUFA – monounsaturated fatty acids; [3] PUFA – polyunsaturated fatty acids.

On the other hand there were significant differences (P<0.01) for palmitoleic, steric, linoleic and linolinleic acids. Lauric acid have higher value in group T1 followed by group C .Myristic in group T3 was higher value followed by group control .This is may be attribute for

process of liver to convert to cholesterol. Palmitic nevertheless insignificant but mathematical have high value in group C because of SF utilization in this diet of group. Steric was high light significant in group C which used paced fat ,on the other hand for oleic acid was higher value in group T3 due to mixing differs type and level of USF. Linoleic acid have roll for combination of LDL in the liver .high level was in group C .On the other hand for linolenic which have role for combination of HDL was high value in group T3 which mixing proportion more of USF.Arachidic acid insignificant where there high value in T1. On other side arachidonic and behenic was in significant but high value was in group T3 and T2 respectively.These results agree with data obtain by **Hulan *et al.* (1983)**.

CONCLUSION

It is found that amino acids profile changed in the liver by addition of those mixing different type and level fat to improve the quality of the liver in the point view of human health and well being, also increae of essential some amino acids like syctine acids by packed fat . There were opposite relationship between levels of saturated fatty acids and proportion of amino acids in liver chicks'

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