



Choline chloride(%60)	0.1	0.1	0.1	0.1	0.1	0.1
vitamins and minerals	0.1	0.1	0.1	0.1	0.1	0.1
DL-Lysine	0.04	0.04	0.04	0.04	0.04	0.04
DL-methionine	-----	0.19	0.14	0.09	0.05	-----
HM-methionine	-----	-----	0.05	0.09	0.14	0.19
Total	100	100	100	100	100	100

#### Calculated composition

ME, kcal/kg	2861.36	2854.9	2854.9	2854.9	2854.9	2854.9
CP %	16.30	16.28	16.28	16.28	16.28	16.28
Met %	0.24	0.43	0.38	0.33	0.29	0.24
Lys %	0.75	0.75	0.75	0.75	0.75	0.75
Calcium %	4.00	4.00	4.00	4.00	4.00	4.00
Available Phosphorus %	0.39	0.39	0.39	0.39	0.39	0.39

## Results and Discussion

Table (2) report some productive parameters of experimental treatments, The birds of T3 were better than T1 (control) about 6.39% and 4.44% for egg production and mass respectively and this improvement due to supplemented Herbal methionine plus DL-methionine, The active compounds in the Herbal-methionine are which cause enhancement in the digestion, absorption, availability of nutrients and energy production with protein synthesis. In general adding Herbal methionine with DL-methionine enhanced egg production and egg size immunity and act as antioxidant (Kumari *et al.*, 2012; Kaur *et al.*, 2013; Nanda *et*

*al.*, 2018) Herbal methionine used 100% instead of DL-methionine to complete the needs (T6), the birds for this treatments consumed lest feed, protein and methionine by comparing with the control birds (T1), On the other hand the ability of the feed, protein and methionine to egg were better for T6 birds than T1 birds. Data presented at Table (4) showed the report the feed cost for producing one Kilogram of egg. The lowest cost feed as dollars was for the birds of T6 by recording about 0.469 dollar feed cost / one Kilogram of egg, While this value was 0.505 dollars for control (T1) birds.

**Table 2 :** The effect of herbal methionine substitution as a substitute for DL- methionine on egg production performance rate (1–60 days) for laying hens ISA BROWN (adjusted  $\pm$  standard error).

	T1	T2	T3	T4	T5	T6
Egg production %H.D	5.14 $\pm$ 81.1	5.53 $\pm$ 79.07	3.87 $\pm$ 87.50	5.14 $\pm$ 84.53	4.29 $\pm$ 86.29	1.57 $\pm$ 84.72
Egg weight g	1.62 $\pm$ 69.30 a	0.87 $\pm$ 67.08 ab	1.20 $\pm$ 69.58 a	1.08 $\pm$ 69.65 A	0.95 $\pm$ 68.33 A	1.11 $\pm$ 64.75 B
Egg mass G	3.88 $\pm$ 62.41	3.92 $\pm$ 59.34	2.92 $\pm$ 66.85	4.15 $\pm$ 65.02	3.54 $\pm$ 65.16	1.48 $\pm$ 62.04

The different letters within the same row indicate a significant difference between the transaction rates on the probability level 5%

**Table 3 :** The effect of herbal methionine substitution as a substitute for DL- methionine on feed intake, FCR, protein, methionine (1–60 days) for laying hens ISA BROWN (adjusted  $\pm$  standard error)

	T1	T2	T3	T4	T5	T6
Feed intake	3.93 $\pm$ 105.11	5.34 $\pm$ 98.26	3.94 $\pm$ 106.65	3.60 $\pm$ 105.35	4.89 $\pm$ 105.46	2.94 $\pm$ 97.85
FCR	0.13 $\pm$ 1.80	0.12 $\pm$ 1.77	0.04 $\pm$ 1.66	0.14 $\pm$ 1.73	0.05 $\pm$ 1.68	0.06 $\pm$ 1.67
Protein intake	0.64 $\pm$ 17.13	0.87 $\pm$ 16.00	0.64 $\pm$ 17.37	0.58 $\pm$ 17.15	0.79 $\pm$ 17.17	0.48 $\pm$ 15.93
PCR	0.02 $\pm$ 0.29	0.02 $\pm$ 0.28	0.00 $\pm$ 0.27	0.02 $\pm$ 0.28	0.00 $\pm$ 0.27	0.01 $\pm$ 0.27
Methionine intake	9.61 $\pm$ 257.21 D	23.21 $\pm$ 426.79 a	15.14 $\pm$ 409.91 a	12.05 $\pm$ 352.25 B	14.41 $\pm$ 310.42 c	7.20 $\pm$ 239.11 d
MCR	0.25 $\pm$ 3.32 D	0.47 $\pm$ 5.78 a	0.18 $\pm$ 4.98 ab	0.39 $\pm$ 4.49 bc	0.13 $\pm$ 3.79 dc	0.13 $\pm$ 3.03 d

The different letters within the same row indicate a significant difference between the transaction rates on the probability level 5%

**Table 4 :** The effect of herbal methionine substitution as a substitute for DL- methionine economic return (1–60 days) for laying hens ISA BROWN

	T1	T2	T3	T4	T5	T6
The price of one ton of feed \$	281.96	287.50	286.00	284.50	283.31	281.81
One Kg price \$	0.281	0.287	0.286	0.284	0.283	0.281
feed conversion ratio (g feed / g egg mass)	1.80	1.77	1.66	1.73	1.68	1.67
The cost of feeding to produce one Kg of eggs \$	0.505	0.507	0.474	0.491	0.475	0.469

I relied on the prices of fodder materials on the international website for trading grains, grains and fodder materials via the internet

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