ABSTRACT

The knowledge of the relationship between the metabolic profile of the pregnant female and the evolution of the conception product is important through the consequences that manifest in its further development. The relation mother – child – newborn affects the obtaining of healthy bodies, with an appropriate expression of the biological and productive potential. The intervention on the pregnant doe through the growth system (nutrition, environmental factors) causes changes in the physiological status and metabolic profile with echo on the normal development of the fetus. Items that have role in the normal postnatal development of the conception products obtained can be directed and benefit involved in providing health and in the development of the productive capacities. At the clinically healthy females were identified metabolic profile indices correlated with the indices of breeding, and by failure of food and maintenance requirements may appear different metabolism dysfunctions reflected negatively on the offspring. The essential condition for life maintaining is the intake of food and, the metabolic status and the nutrient substances requirements of the body strongly influence the food consumption.

These scientific evidences have been the starting point of the research and then during the four years we have extended the study on other elements with fundamental role in the biological evolution of Giant Belgian females.

Structurally, the thesis consists of two distinct parts. First part written on 85 pages in four chapters covers literature synthesis on the growth and maintenance systems, nutrition, metabolic profile of rabbits, synthesis sustained by 253 bibliographic titles.

The second part includes the personal research and is spread over 163 pages, the research results are contained in 130 figures and 50 tables. The raw data were ordered into a database and then subsequently subjected to statistical calculation.

There have been investigated 314 female and 8 male rabbits from the Giant Belgian breed and 61 embryos and 42 newborns derived from the pregnant females. From the total number of animals 80 were females from the parental generation, 45 from the second generation and 24 from the third generation. At the adult females was monitored the metabolic profile prior

breeding, at the half and middle of the gestation period, on blood samples collected on anticoagulant and respective blood serum.

On embryos, fetuses and newborns up to the F2 generation were made determinations regarding the weight and length. To study the degree of corporal development of embryos and fetuses there were conducted ultrasound exams and cesarean. The hem – leukocytes profile (RBC, HGB, HCT, MCV, MCH, MCHC, WBC, PLT) was determined with the automatic analyzer ABX Micros ABC VET and the biochemical profile with ACCENT analyzer 200. The bone marrow and peripheral blood smears were colored through May Grümwald – Giemsa method.

The results from the ultrasound showed a development of the spine and limbs, which may be well highlighted around the 17th day of gestation, the embryo is visible on the 13th day of gestation and it measures 7.3 ÷ 8.9 mm long, at 15 days the head, body and heart can be measured, at 29 days of gestation the length of the heart can be measured and it was 10.65 mm, the majority of the embryonic losses occur at the age of 15 days.

The results obtained from the embryos, fetuses and pregnant uterus examination have shown that the body growth is related directly to the location of the fetus in the uterine horn. The fetus located close to the ovary was the lowest (24.32 g), and the fetus close to the cervix had higher dimensions (46.2 g). During pregnancy, the weight of young rabbits had a slow evolution until the 16th day of gestation, following a rapid growth between the 24th and 30th day, the embryos multiply their weight up to 6 times, going from 10 to 60 g. It was noted that the biggest evolutions on body development occur between the 18th and 30 days of gestation, the monitoring showing: the volume of amniotic fluid increased between the 18th and 20th days of gestation (3.85 mL), the maximum volume achieved was in the day 23 (4.20 mL) and then decreased between the 25th and 30th days of gestation, 0.72 (mL); the body weight recorded significant growth between the 20th and 23rd day of gestation (2.69 ÷ 9.82 g), at the end of the period reaching 40.41 g; the heart weight increased throughout the gestation period from 0.05 g recorded at 18 days to 0.010 g at 27 days of gestation, remaining constant until the 30th day; the liver had a minimum value of 0.16 g at 18 days reaching at the end of pregnancy 3.34 g; the lungs had a minor evolution during embryonic development starting from a mean value of 0.02 g at 18 days of gestation and reaching up 0.03 g at the end of pregnancy. The pregnant uterus had a value of 230.3 g and the distance between the cervix and last placenta was higher (5 cm) than the distance between the oviduct and the first placenta (3.8 cm). The available space for each fetus for its intrauterine development was around 4.36 cm. The results obtained from newborns to youth up to 150 days old, show that males have always bigger weight and length than the females. At one day from calving females had an average body weight of 55.43 g compared to

males who averaged a weight of 64.84 g. The average body length for females was 8.30 cm and 11.65 cm for males. At 30 days females had the average weight of 510 g with a body length of 24.6 cm and males were weighing 479 g with a body length of 24.5 cm. At 60 days postpartum the maximum point of the body weight was reached by males, 1375 g, the females topping around 768.75 g. The length ranged between a minimum mean value of 34.75 cm for females and a maximum of 36.55 cm for males. At 90 days old the females had an average weight of 1008 g and a length of 33.2 cm and males have been located around the average value of the weight of 1150 g with a length of 35 cm. At 120 days the females had a weight with 892 g greater than the one obtained at 90 days (1900 g), at the opposite pole, the maximum was recorded at males (2300 g). The body length at this age had similar variations between the sexes, recording an average value of 43 cm. At 150 days postpartum males had an average weight of 2733 g and a body length of 46.5 cm compared with females who had a body length of 46 cm and a weight near 2185cm.

The results regarding the metabolic profile revealed that the amount of hemoglobin and hematocrit were significantly increased at females before pregnancy (12.46 g/dL respectively 39.50%) compared with the pregnant ones (10.87 g/dL and 33.70%). At descendants the hematocrit, the average erythrocyte and the mean concentration of erythrocyte hemoglobin increased significantly in individuals of third generation (39.93 g/dL; 68μm^3; 29.15 g/dL) compared with the parental generation (34.87 g/dL, 62.33 μm^3, 31.77 g/dL). The total number of red blood cells, the mean erythrocyte hemoglobin and the platelets number varied significantly between the populations of studied animals. The total number of leukocytes has increased significantly in cunicul youth 7.52 mil/mm^3, compared with the parental generation (5.76 mil/mm^3). The quantity of proteins and glucose varied insignificant from the parental and progeny generation point of view. The quantities of cholesterol, triglycerides, alanineaminotransferase, increased significantly in females in the last phase of gestation (57.50 mg/dL, 61.75 mg/dL, 45.67 U/L). The quantity of calcium increased significantly at the end of gestation (14.20 mg/dL) prior to breeding females (1.8 mg/dL) and the ones from the middle of gestation the period (1.7 mg/dL). The quantity of phosphorus significantly decreased at females of late gestation (3.81mg/dL) compared to females before breeding (7.59mg/dL). The results of haematological profile at the middle period of gestation revealed a minimum value for erythremy (4.71 mil/mm^3) at pregnant females from the parental generation and a maximum at the F2 generation females (6.29 mil/mm^3), the same variation was observed regarding the hematocrit values (30.3 %, 43.6%, respectively 43.6%) and opposite type variations in the total number of leukocytes 4.8 mil/mm^3, respectively 6.6 mil/mm^3. At the end of gestation there were similar variations. The sanguine biochemical profile at the middle of the gestation period

revealed significant variation for cholesterol and alanineaminotransferase at the females from the F1 generation. At the end of pregnancy weren't found significant oscillations between the three generations. At the females form the parental generation there have been obtained higher values for the hematocrit (39.50%) and hemoglobin (12.46 g/dL) before breeding. Also at the end of the pregnancy period the biochemical profile has recorded significantly elevated cholesterol (57.50 mg/dL), triglycerides (61.75 g/dL), AST (76.37U/L) and ALT (45.67U/L) values. The newborns from these females had an average body weight of 59.49 g and length of 10.42 cm. At the females from the first generation (F1) there weren't obtained significant variation in the expression of haematological and biochemical profile. The body weight of the newborns had an average value of 52.69 g and the body length was 10.9 cm. The metabolic profile obtained in females from the F2 generation had no significant variation, their descendants registering an average weight of 42.6 g with an average body length of 10.6 cm.

The morphological and biochemical research carried out indicates that all characters are shaped by the universe called fetus womb and can be shown in very early stages (10th day) and the development can be quantified from the 15th day. Based on these data we can reveal the abnormalities of growth and development, knowing that the intrauterine development depends on hormones that act during pregnancy, the space that individuals have in the womb, by them and their mother feeding and the number of genes inherited from parents.

The researches on the relationship of metabolic profile, intrauterine and postnatal growth and development pursued in the descendants (up to the third generation) are not found in the specialty literature consulted.