



## **SENSITIVITY OF INFERTILE WOMEN TO NATURAL ALLERGENS**

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**Relevance.** The female factor in 60% of cases causes childlessness. Female infertility is more often caused by functional disorders in the body, the treatment of which leads to a successful pregnancy and motherhood. Now, in connection with deterioration of ecological conditions, development of the chemical industry and wide use of various products causing allergy, in agriculture, food and chemical industry, sharp increase of sensitization of an organism of people influencing a condition of their health is established. Thus, the frequency of allergic dermatitis, allergic asthma, allergic bronchitis, rhinitis, vasculitis has increased dramatically.

Immunological infertility occurs in both men and women. It is expressed in the body's production of antibodies to its own or partner germ cells. They are also called ASAT - antisperm antibodies. The frequency of distribution of the immunological factor of infertility in females is up to 32%, in males - up to 15%.

At present there are a huge number of people with hypersensitivity to foodstuffs, household chemicals, antibiotics, various plants, etc. From these points of view, it becomes clear that hypersensitivity to various allergens, everywhere surrounding each person, cannot but affect the overall health and reproductive function of the person. [1, c.1].

At present, there is evidence of infertility development in the literature in connection with the emergence of a woman's tolerance to her husband's sperm, associated with sperm agglutination and reduced mobility through cervical mucus, capitation [1, p.5-6; 2, p.87-88; 3, p.814], which is characteristic of the development of specific IgG4 together with IgG1 [1, p.3; 4, p.20-21]. Also, activation of the components of the seed liquid with the appearance of antisperm antibodies [5, p. 351-352] has been established.

**Keywords:** infertility, antibodies, sensitization.

The purpose of our study was to assess the sensitization profile of women of fertile age suffering from infertility to the spectrum of allergens of animal and plant origin.





## Materials and Methods

The work was carried out in the International Center of Molecular Allergology on the basis of the Center of Advanced Technologies (Tashkent, Uzbekistan).

Forty women (the main group) aged 24 to 40 years (average age  $29.5 \pm 2.4$  years) living in Bukhara (Uzbekistan) took part in the study with a diagnosis of infertility. The control group consisted of 20 healthy women of the same age residing in the same region. Written informed consent was obtained from all the patients for the study.

The criteria for inclusion in the study were patients with infertility (primary and secondary) of infectious or mixed genesis. The exclusion criteria were patients with infertility of hormonal genesis, severe somatic pathology and allergic diseases.

The serum was tested with the ALEX allergotest (MADx, Austria) according to the manufacturer's instructions. Patients with IgE-specific levels of at least 0.1 kU/L were considered positive. Analysis of IgE-sensitization profiles to allergenic molecules was performed using IBM SPSS 20 and Microsoft Excel.

## Results of the Study and Discussion

A comparative analysis was carried out for 20 allergenic molecules and animal epidermis extracts: cats, dogs, rats, mice, cows, goats, sheep, horses, pigs, rabbits, guinea pigs and hamsters (Table 1).

Table 1 List of allergenic molecules and animal extracts for testing women suffering from infertility

Animal species	Scientific title	Molecule
Cat	Felis domesticus	
Cat	Felis domesticus	rFel d 1
Cat	Felis domesticus	rFel d 2
Cat	Felis domesticus	rFel d 4
Cattle	Bos domesticus	
Cattle	Bos domesticus	rBos d 2
Dog	Canis familiars	
Dog	Canis familiars	rCan f 1
Dog	Canis familiars	rCan f 2
Dog	Canis familiars	rCan f 3
Goat	Capra hircus	
Guinea pig	Cavia porcellus	
Hamster	Cricetus cricetus	
Horse	Equus caballus	
Horse	Equus caballus	rEqu c 1
Mouse	Mus musculus	nMus m 1
Pig	Sus domesticus	
Rabbit	Oryctolagus spp.	
Rat	Rattus norvegicus	
Sheep	Ovis aries	



Sensitization to 16 allergic molecules and food extracts of animal origin, in particular, molecules of chicken protein and egg yolk, cow's milk of camels, goats, horses and sheep, as well as allergens of chicken, turkey, beef, lamb, horsemeat were also assessed (Table 2).

Table 2 List of allergenic molecules and food extracts of animal origin for testing women suffering from infertility

Product	Scientific name	Molecula
Camel milk	Camelus dromedarius	
Cow's milk	Bos dromedarius	
Cow's milk	Bos dromedarius	nBos d 4
Cow's milk	Bos dromedarius	nBos d 5
Cow's milk	Bos dromedarius	nBos d 8
Goat's milk	Capra hircus	
Horse's milk	Equus Caballus	
Sheep's milk	Ovis aries	
Cow's milk	Bos domesticus	
Cow's milk	Bos domesticus	nBos d 6
Chicken meat	Gallus domesticus	
Horse meat	Equus caballus	
Sheep meat	Ovis aries	
Pig meat	Sus domesticus	
Rabbit meat	Oryctolagus spp.	
Turkey meat	Meleagris gallopavo	

Among the examined patients, 28 (70%) suffered from primary infertility and 12 (30%) from secondary infertility. The duration of infertility was from 3 to 10 years. In Vitro Fertilization was applied in 7 (17, 5%) patients. Allergic anamnesis was observed in 22 (55.0%) patients from the main group and 3 (15.0%) women from the control group. In the main group of women there were 9 (22,5%) patients with antibiotic allergies.

As a result of the conducted studies it was established that in the main group (Table. 1-A) 8 (20%) women with infertility demonstrated sensitization to the allergenic molecule Fel d 2, which is a cat's albumin, 7 (17.5%) women had IgE to the cow's epidermis (Bos d epithelia). One woman reacted to the goat's epidermis, guinea pigs and hamster to each allergen 3 (7.5%).

No IgE sensitization and clinically significant reaction to the respiratory allergens of the animal epidermis was detected in the control group women. The exception was cat molecules Fel d 1 and Fel d 2, to which IgE was detected in one woman of this group



(5.0%). The average IgE level to Fel d1 and Fel d2 in the group was 0.3 and 0.02 kU/L, respectively. The median was zero. Patients of the control group were also immunologically tolerant to all studied molecules and food extracts of animal origin (Fig. 1-B).

Sensitization to food allergens of animal origin in women of the main group was expressed in the presence of specific IgE to beef 9 (22.5%), to horse meat - 8 (20.0%), to rabbit - 4 (10.0%). In addition, 2 (5.0%) women were sensitized to the ovomucoid of the chicken protein Gal d 1 to the ovotransferrin Gal d 3.

Thus, a group of women with infertility (the main group) demonstrated a profile of sensitization to allergens of animal origin, which differs significantly from the profile of women in the control group. It was found out that 8 (20.0%) patients with infertility were characterized by sensitization to cat's albumin, to cow's meat and epidermis.

On the basis of the obtained results it is possible to propose a hypothesis that for a part of women with infertility allergic reactions to animal allergens are characteristic. The presence of homologous epitopes of allergens with human antigens may cause cross-reactions, support allergic inflammation, and probably lead to reproductive dysfunction in women.

In turn, the use of molecular allergology methods in the comprehensive examination of patients with infertility can be an additional method for the diagnosis of allergic sensitization of women. All this gives an opportunity to look at the pathogenesis of infertility in a different way and, of course, to reconsider the approaches to the diagnosis and treatment of infertility. Also, allergic sensitization to animal protein should be considered when carrying out artificial insemination, taking into account the use of bovine albumin in this procedure.

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