COW URINE ENHANCES BODY'S DEFENCE AGAINST INFECTIONS AND CANCERS

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During the process of evolution, biological organisms developed defense mechanisms that protect them in the event of assault by physical, chemical and biological agents. One of these mechanisms of higher organisms enacts through the development of a complex immune system, whose balanced responsiveness is essential for well being and survival of the organisms. Any defect in the structural or functional attributes of the immune system leads to immunopathological manifestations like immunosuppression, hypersensitivity or autoimmunity and makes the animal or man more susceptible to various kinds of diseases. In today's polluted environment, immune system is susceptible to the demolishing effects of various pollutants like pesticides, heavy metals, mycotoxins etc. In the last few years, it has been observed that in spite of good management practices including timely vaccination, the infectious diseases did occur due to depressed immune system as a result of environmental pollution.

In the thirst of modernization and industrialization, man has contributed pollution in the environment leading to disturbance in life cycles and ecology of plants, animals and microbes. Increased demand for food and fibre has lead to the chemicalization of agriculture and we have reached to such a stage that modern agriculture is dependent on high yielding varieties, which can only be grown under the influence of fertilizers and pesticides. Chemical pesticides, owing to their universality and diverse effects, are widely used in agriculture to protect crops from pest menace. Repeated application of pesticides and fertilizers resulted in contamination of various crops with their residues, metabolites and/or heavy metals, which are having easy access into the food chain. The main pesticides which are used in agriculture, animal husbandry or public health operations are classified into 4 groups along with their per cent share in market (i) Insecticide 77.0%, (ii) Herbicide 13.0%, (iii) Fungicide 8.6%, (iv) Rodenticide 1.0%, (v) Others 0.4%.

Majority of these pesticides are beneficial when used for specific purposes, handled properly and applied as per the recommendations of the manufacturer. However, over the years there has been a mounting fear and concern that indiscriminate and improportionate use of pesticides may lead to harmful effects in man and animals who are exposed to the low level of pesticide residues in air, water and food chain. In an ideal pesticide application, the chemical should fall exactly on the target and be degraded completely to harmless compounds. However, this situation is never attained practically and only some part of the pesticide hits the target pests while remaining drifts into environment.

The presence of pesticide residues has been detected in various items including food and feeds. Similarly, heavy metals such as lead, mercury and cadmium, which are common contaminants of pesticides and/or fertilizers, may get entry into the food chain. The levels of pesticides and heavy metals in food items are found to be at much higher levels than expected, because of heavy contamination of the environment.

In past, most of the research work had been directed towards the clinical toxicity of the pesticides/heavy metals but little attention has been paid to study the indirect toxicity using chronic low doses. However, there have been many reports of breakdown of immunity of animals and/or man and inspite of proper vaccination, diseases do occur in vaccinated population. Though various reasons have been suggested as cause of vaccinal failure, the immunocompetence of animal at the time of vaccination is not given due importance.

To protect the immune system from environmental stress various chemicals possessing immunomodulatory properties have been tired with no much success. A good immunomodulator should enhance both specific and paraspecific immunity of body but no single chemical drug is able to fulfill this requirement. However, certain plants are tested for their ability to modulate immunity.

Cowpathy is an age old system of medicine described in ancient Indian literature ‘Ayurveda’ as ‘Panchgavya Chikitsa”. In Ayurvedic system, medicines are prepared either from plants or from animals besides the use or certain metals. The Ayurvedic medicines of animal origin are mainly prepared from cow products. The high profile medicine ‘Panchgavya’ is prepared from five materials received from cows that includes milk, Dahi (curd), Ghee (butter oil), urine and dung. The ability of indigenous cow urine is tested for its immunomodulatory properties in mice, rat and avian lymphocyte cell culture system for the first time and the results are presented in Table 1.

Table 1. Percent increase in immunity through various parameters in comparison to control

	Parameters	**Percent increase in immunity**
1.	B-cell blastogenesis	59.5 %
2.	T-cell blastogenesis	64.0 %
3.	Serum IgG level	19.8 %
4.	Serum IgM level	19.0 %
5.	Serum IgA level	0.53 %
6.	Macrophage Functions	104.0 %
7.	DTH reaction	126.0 %
8.	Interleukin 1 level	30.9 %
9.	Interleukin 2 level	11.0 %

The urine of indigenous cow is also compared with the urine of other animals such as crossbred cows, buffaloes, goats, exotic cows and hill cows. It has been observed that the urine of indigenous and hill cows is quite effective as far as the immunomodulation is concerned the goat urine is also effective but upto the 50% of the cow urine. This finding is further supported by the presence of “Rasayan” in the urine of indigenous cows (Table 2).

Table 2. Analysis urine through chemical fingerprinting (HPLC)

	Characteristics	Indig-enous cow	Hill cow	Goat	Exotic cow	Cross-bred cow	Buffalo
1.	Tridos har ¼f=nks"kgj½	√	√	√	√	X	√
2.	Madhur ras ¼e/kqj jl½	√	√	√	√	X	X
3.	Madhur vipak ¼e/kqj foikd½	√	√	√	X	X	√
4.	Katu ras ¼dVq jl½	√	√	√	√	X	√
5.	Tikta ras ¼frDr jl½	√	√	√	X	√	√
6.	Kashay ras ¼d'kk; jl½	√	√	√	√	√	√
7.	Raktas shodhak ¼jDr 'kks/kd½	√	√	√	√	√	√
8.	Deepan ¼nhiu½	√	√	√	√	√	√
9.	Pachan ¼ikpu½	√	√	√	X	√	√
10.	Rasayan ¼jlk;u½	√	√	√	X	X	X
11.	Amhar ¼vkegj½	X	√	√	√	√	√
12.	Vat viridhi ¼okr~ o`f)½	√	√	√	√	X	X
13.	Hepatoprotective ¼ftxj j{kd½	√	√	√	√	X	√
14.	Stress reliever ¼ruko jks/kd½	√	√	√	√	X	√
15.	Effect on blood calcium level ¼dSfY'k;e ij izHkko½	√	X	X	√	X	X

Conclusion

This study showed that indigenous and hill cow urine have immunomodulatory properties, which is a unique finding reported for the first time. The findings will be utilized to treat the patients with depressed immune system like AIDS and cancer.