www.ThePharmaJournal.com

The Pharma Innovation

ISSN (E): 2277-7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2023; 12(3): 1163-1167

www.thepharmajournal.com
Received: 19-12-2022
Accepted: 29-01-2023

K Satish Kumar
Professor and University Head, CVSc., Rajendranagar, Hyderabad, Telangana, India

V Surya Prasad
Head - Veterinary Services, Indian Immunologicals Ltd., Hyderabad, Telangana, India

VVV Amruth Kumar
Associate Professor and Head, CVSc, Mamnoor, Telangana, India

K Mohanambal
Research scholar, CVSc., Rajendranagar, Hyderabad, Telangana, India

Corresponding Author:
K Satish Kumar
Professor and University Head, CVSc., Rajendranagar, Hyderabad, Telangana, India

Efficacy studies of equine placental extract on canine alopecia

K Satish Kumar, V Surya Prasad, VVV Amruth Kumar and K Mohanambal

Abstract
Background: Integumentary system is considered as the largest organ of the body and it exerts both internal as well as external affections on the body. Canine dermatological cases account for nearly 25% of the routine clinical cases. Several human dermatological studies came up stating the importance and use of placental extract but, the same on animals were lacking. Hence, the current study was aimed to pinpoint the role of equine placental extract on non-specific cases of canine alopecia.
Methods: A total of 30 client owned dogs with localized or generalized non-specific alopecia with or without dermatitis were selected for the study. After a through clinical, physical and haemato-biochemical examination, alopecia dogs with specific etiology were ruled out and only dogs with non-specific alopecia were recruited for the study. All the dogs were administered with equine placental extract supplement at the dose rate of 2 ml/10 kg body weight orally, weekly thrice until 3 weeks, followed by weekly twice for a two-month period initially, with monthly evaluation. After recovery further one month, the supplementation was continued to keep the hair growth in a stationary phase.
Results: Breed-wise prevalence of non-specific alopecia was high in Labrador (36.67%), followed by German shepherd (23.33%); the study reports the highest prevalence in female dogs, and dogs in the 1-5 year age group were highly susceptible. Common presenting signs were generalized alopecia, patchy hair loss on back and neck region, dry skin with scales, pigmentation and mild erythema. Hemato-biochemically, no significant difference was noticed. Supplementation of placental extract evidenced hair regrowth, shiny coat, prevention of hair fall along with overall improvement in skin and coat. A high percentage of dogs (66.67%) recovered moderately after two months of supplementation, and recovered completely by the end of 3 months.

Keywords: Equine placental extract, hair regrowth, non-specific alopecia, dog

Introduction
In pet practice, dermatological disorders affect a large proportion of population with the recorded prevalence of 17%-25% (Hill *et al.,* 2006; Khoshnegah *et al.,* 2013) [3, 7]. In general, placenta aids in the development of foetus, have rich source of various biological compounds such as, amino acids, vitamins, trace elements, peptides, various nutrients and growth factors (Lee *et al.,* 2012; Jung *et al.,* 2011) [10, 5]. Placental extracts are added in many human pharmaceuticals as bio medicine, to alleviate dryness and add nourishment to skin and hair (Nagae *et al.,* 2022) [12]. Canine dermatological practice lacks the application of placental extract products on alopecia and dermatitis therapy. Hence, randomized controlled study was carried out after getting owner consent on non-specific canine alopecia with or without dermatitis.

Materials and Methods
Study animals: During the study period (January 2022 - June 2022) the dogs of various breeds, age group of either sex presented to medicine unit of veterinary clinical complex, Hyderabad with the history of generalized or localized/patchy alopecia, itching, dry skin with scales and rough dry coat were taken for the study. All these cases were subjected for a thorough clinical and physical examination, skin scrapping evaluation, hematology and hormonal assessment to rule out and eliminate the specific cases (pyoderma, demodicosis, malasseziosis, hormonal dermatoses, food allergy, atopy, external parasites, immune mediated cases) from the study group. Finally, a total of 30 client owned pet dogs with localized or generalized non-specific alopecia with or without dermatitis were randomly selected for the study after getting proper consent from the owner.

Study design: After thorough evaluation, the non-specific alopecia dogs (30 numbers) were administered with equine placental extract as dietary supplement (a research product developed by Japan Bio Products Company Ltd (JBPL), Japan) at the dose rate of 2 ml/10 kg body weight thrice weekly for first 3 weeks, followed by twice weekly for subsequent weeks until two months initially, but followed for three months if there is no complete recovery. The study was carried out to evaluate the adverse events observed after administration of placental dietary supplement in dogs and to assess its efficacy. Monthly evaluation was done to ascertain the body condition score, skin and coat condition and hair growth assessment.

Placental extract administration: Equine placental extract (JBPL) was available as 2 ml nebules, each containing 2 ml of purified equine placental extract. Selected 30 dogs of non-specific alopecia were administered with placental extract orally as the sole herapy. The acceptance level of placental extract is also recorded in each case.

Assessment of dogs: All the dogs that received placental extract were observed for any adverse events and clinical improvement. Periodical evaluation was carried out monthly as baseline, end of first month, second month and third month and scored as 0 to +3, viz., no change in hair and skin coat (0), slight improvement (+1), moderate improvement (+2), significant improvement (+3) in hair regrowth and absence of alopecia. Haemato-biochemical changes were assessed on day 0, 60 and 90 using autoanalyzer.

Statistical analysis: One way ANOVA (Post Hoc Tukey, HSD) was used for the calculation.

Results and Discussion

Prevalence of dermatitis: In the present study the non-specific cases of alopecia was recorded to be highest in Labrador (36.67%), German shepherd (23.33%), Mongrel (13.33%), Pug (10%) and lowest among Pomeranian, Bull dog, Husky, Lhasa Apso and Chihuahua (each at 3.33%). These findings were partially in accordance with the reports of Khoshnegah *et al.,* (2013) [7], who recorded highest prevalence of alopecia and dermatitis in Spitz, Terriers followed by German shepherds. This could be due to breed availability on that geographical area where the study was carried out and the focus on only non-specific alopecia. Out of the total non-specific alopecia dogs enrolled, 14 (46.67%) were males and 16 (53.33%) were females, the findings of which are in contradiction with Khurana *et al.,* (2016) [8] and Thapa and Sarker (2018) [15], who reported the highest prevalence of dermatitis and skin and coat abnormalities among male dogs. The recruited cases were aged between 3 months (< 1 year) to 7 years (> 5 years), the recorded cases of non-specific alopecia were high in 1-5 years (53.33%), followed by less than 1 year (36.67%) and above 5 years (10%). Singh *et al.,* (2012) [14] recorded similar high prevalence among young dogs compared to adults and according to his reports, the highest prevalence as recorded among parasitic dermatitis, followed by bacterial, fungal and non-specific dermatitis in less than one year age group.

Assessment of dogs: Recruited dogs were showing alopecia of varied intensity and a few of these were also presented with associated manifestations like erythema, pruritis and crusts etc., as shown in table 1. Placental extract was readily accepted by all the dogs (100%), thus confirming its palatability. Placentophagia was common in many mammals including primates (Marraccini and Gorman, 2015) [11], that could be attributed to its taste and aroma. Further, all these dogs were found to be physically active and no clinical abnormality or adverse effects were observed neither immediately nor during the course of evaluation period.

Table 1: Recorded dermatological lesions

S. No	Dermatological signs	No. of affected pets	Skin Score			
			Day 0	Day 30	Day 60	Day 90
1.	Generalized alopecia	7	Invariably considered as '0' On the day of presentation	1	2	3
2.	Patchy alopecia	3		2	3	3
3.	Generalized alopecia with focal spots	2		1	2	3
4.	Dry brittle hair coat	5		1	2	3
5.	Erythema	2		1	2	3
6.	Crust and scale formation	5		1	2	3
7.	Epidermal collarettes	3		1	2	3
8.	Scales with itching	2		1	1	2*
9.	Hyper pigmentation of ventral abdomen	1		1	1	2*

* 3 dogs with an underlying specific cause

Though non-specific alopecia was seen as a primary complaint of all the recruited dogs, crusty and scaly lesions, scales with itching was also observed in Mongrel which took long term supplementation for 100% recovery. Erythema was commonly encountered in Labrador and Pomeranian breeds, epidermal collarettes were observed in a Bull dog after grooming. Generalized alopecia with focal spots and dry brittle hair coat were common in German Shepherd followed by Pug, and whereas, hyperpigmentation was noticed in Lhasa Apso. In the present study, the placental extract Supplement feeding resulted in an overall improvement in all the dogs, which discloses the importance of dietary supplementation. Following supplementation of placental extract, all the dogs with varied intensity of alopecia started showing improvement i.e., reduced hair fall, lustrous hair coat, and absence of erythema and pruritus, further reached to a skin score of +1 by day 30. However, the score continued to improve and reached +2 in 90% of cases by day 60 and +3 by day 90. Placental extracts have antioxidant, antimicrobial, anti-inflammatory, hair growth promotion, tissue regeneration and rejuvenation capacity (Pan *et al.,* 2017) [13]. Additionally, dietary supplement of equine placental extract was reported to be efficacious to improve skin quality in humans by Nagae *et al.* (2022) [12] and it is safe to use (Wakame *et al.,* 2019) [16].

Kim *et al.* (2010) [9] and Jash *et al.* (2011) [4] also reported the importance of placental extracts in inflammatory skin diseases. Equine placental extract contains methionine, asparagine, helps to reduce histamine concentration, stimulates skin repair and maintains skin moisture respectively, because dry skin is the culprit for scale and crust formation owing to attract the secondary bacterial invasion (Bourguignon *et al.*, 2013) [1]. Tyrosine, rich in equine placenta helps to give colour to skin and hair, serine and lysine maintains skin moisture and hair growth, respectively. Recent study of Wakame *et al.* (2019) [16] in humans reported the possibility of supplementation of placental peptides in cosmetic applications to improve skin elasticity and reduce wrinkles. There were no significant changes in haemato-biochemical findings during the course of study except a significant (P<0.05) reduction in total erythrocyte count and increment in total protein count (Table 2).

Table 2: Haemato-biochemical changes in non-specific alopecia dogs

S.No.	Parameters	Day 0	Day 60	Day 90	P value
I. Haematology					
1	Hb (g/dL)	10.66±0.58	11.25±0.66	10.66±0.44	0.703
2	PCV (%)	38.96±1.67	37.04±1.30	40.49±1.41	0.268
3	RBC (x10^6/µL)	6.05±0.14*	6.34±0.26	6.97±0.31*	0.03
4	WBC (x10^3/µL)	12.22±0.81	10.72±0.35	10.58±0.64	0.143
5	Platelets (x10^3/µL)	280.55±20.28	309.20±26.93	315.25±17.02	0.498
II. Serum biochemistry					
1	Albumin (g/dL)	3.16±0.16	3.26±0.07	3.47±0.14*	0.234
2	Total Protein (g/dL)	6.14±0.21	6.41±0.07	6.78±0.19*	0.078
3	ALT (U/L)	29.78±4.12	29.56±2.56	27.98±2.48	0.913
4	ALP (U/L)	36.2±6.08	41.25±6.78*	35.28±3.86	0.299
5	AST (U/L)	17.6±1.2	19.5±1.33	22.5±2.32	0.051
6	Creatinine (mg/dL)	0.63±0.10	0.60±0.08	0.48±0.09	0.474

*Significant at p< 0.05 with reference to Day 0

Placental extracts have immuno-modulatory and restorative properties (Kang *et al.*, 2007) [6] and was reciprocated in equine placental extract (Fakhradiyev *et al.*, 2022) [2]. In a few cases (10%) complete recovery was not obtained even on day 90 of the study, which could be due to an underlying specific local or systemic cause. Hence, it is opined, in cases of specific dermatitis that are associated with pyoderma, demodicosis, Malassezia dermatitis, hormonal dermatoses, food allergy, atopy, external parasites, immune mediated cases placental extracts may be used as a supplement along with specific therapy, that will aid in complete but faster recovery. The current study states that oral supplementation of equine placental extract completely restores hair growth, skin moisture, shiny coat, gets rid of scales and crust during the course of therapy (Fig 1 and 2)

Day 0 (Score 0) **Day 30 (Score 1)**

Day 60 - Complete recovery (Score 3) **Day 90 - Sustained improvement (Score 3)**

Fig 1: Generalized non-specific alopecia with erythema

Day 0 (Score 0) **Day 30 (Score 2)**

Day 60 - Complete recovery (Score 3) **Day 90 - Sustained recovery (Score 3)**

Fig 2: Localized non-specific alopecia around the eye

Conclusion

The current study on the use of oral equine placental extract supplement against non-specific alopecia is the pioneer in canine dermatology. There are no published reports on its use as hair growth promoter among non-specific canine alopecia. Alopecia affects the appearance of the animal, decreases the quality of life. Furthermore, dermatitis is also a frustrating condition for pet parents owing to its long-term therapy and management. In the present study, the equine placental extract supplementation was voluntarily accepted by all the pets and achieved significant overall recovery from non-specific cases of canine alopecia and dermatitis owing to its rich amino acid contents.

Acknowledgement

The authors are thankful to Indian Immunologicals Limited, Hyderabad for providing the grant, Japan Bio Products company Ltd (JBPL), Japan for providing the samples, and PVNRTVU for providing the facility to carry out this study. A special mention to all the pet owners of Hyderabad for their willingness to involve their pets in this study.

References

1. Bourguignon E, Guimaraes LD, Ferreira TS, Favarato ES. Dermatology in Dogs and Cats. In (Ed.), 2013. Insights from Veterinary Medicine.
2. Fakhradiyev IR, Minbayev BO, Tazhiyeva A, Zhukembayeva AM, Batagoyeva ZZ, Tanabayev B, *et al*. The effect of horse placenta extract on human peripheral blood mononuclear cells. Biomedicine. 2020;40(2):180-187.
3. Hill P, Lo A, Eden CA, Huntley S, Morey V, Ramsey S, *et al*. Survey of the prevalence, diagnosis and treatment of dermatological conditions in small animals in general practice. 2006;158(16):533-9.
4. Jash A, Kwon HK, Sahoo A, Lee CG, So JS, Kim J, *et al*. Topical application of porcine placenta extract inhibits the progression of experimental contact hypersensitivity. Journal of ethnopharmacology. 2011;133(2):654-662.
5. Jung J, Lee HJ, Lee JM, Na KH, Hwang SG, Kim GJ. Placenta extract promote liver regeneration in CCl4-injured liver rat model. International Immunopharmacology. 2011;11(8):976-84.

6. Kang SS, Woo SS, Im J, Yang JS, Yun CH, Ju HR, *et al*. Human placenta promotes IL-8 expression through activation of JNK/SAPK and transcription factors NF-κB and AP-1 in PMA-differentiated THP-1 cells. International immunopharmacology. 2007;7(11):1488-95.
7. Khoshnegah J, Movassaghi AR, Rad M. Survey of dermatological conditions in a population of domestic dogs in Mashhad, northeast of Iran (2007-2011). In Veterinary research forum. 2013;4(2):99.
8. Khurana R, Kumar T, Agnihotri D, Sindhu NE. Dermatological disorders in canines-a detailed epidemiological study. Haryana Vet. 2016;55(1):97-9.
9. Kim YS, Park JJ, Sakoda Y, Zhao Y, Hisamichi K, Kaku TI, *et al*. Preventive and therapeutic potential of placental extract in contact hypersensitivity. International immunopharmacology. 2010;10(10):1177-84.
10. Lee KK, Choi WS, Yum KS, Song SW, Ock SM, Park SB, *et al*. Efficacy and safety of human placental extract solution on fatigue: a double-blind, randomized, placebo-controlled study. Evidence-Based Complementary and Alternative Medicine. 2012.
11. Marraccini ME, Gorman KS. Exploring placentophagy in humans: problems and recommendations. Journal of Midwifery and Women's Health. 2015;60(4):371-9.
12. Nagae M, Nishio T, Ohnuki K, Shimizu K. Effects of oral administration of equine placental extract supplement on the facial skin of healthy adult women: A randomized, double-blind, placebo-controlled study. Health Science Reports. 2022;5(2):e522.
13. Pan SY, Chan M, Wong M, Klokol D, Chernykh V. Placental therapy: An insight to their biological and therapeutic properties. J Med. Therap. 2017;1:12.
14. Singh R, Beigh SA, Soodan JS, Tikoo A, Tantaray H. Clinico-epidemiological studies in canine dermatitis. Indian journal of Canine Practice. 2012;4(2):96-9.
15. Thapa G, Sarkar S. Occurrence of Canine Skin Disorder and its Haematobiochemical Alterations. Int. J Curr. Microbiol. App. Sci. 2018;7(12):184-95.
16. Wakame K, Nakata A, Sato K, Komatsu K, Maruta T. Application of horse-derived placental peptides in cosmetics. Adv Mater Sci. 2019;4:1-6.