

## Occurrence of *Malassezia dermatitis* in Dogs at Jabalpur (M.P.)

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**ABSTRACT:** *Malassezia dermatitis* is a common clinical disorder in dogs caused by the yeast, *Malassezia pachydermatis*, clinically characterized by intense pruritus, alopecia, hyperpigmentation, lichenification, and visibly increased skin thickness. As *Malassezia dermatitis* mimics many other pruritic dermatoses, its diagnosis particularly the differential diagnosis of the disease is quite challenging. A total of 2974 dogs presented to VCC and different private clinics in and around Jabalpur during the period of six months, from April 2022 to September 2022 were screened for *Malassezia dermatitis*. Of these, 736 dogs (24.75%) demonstrated clinical signs indicative of *Malassezia dermatitis* and were subjected to cytological examination for confirmation. Therefore, 106 dogs (14.40%) were found afflicted with *Malassezia dermatitis*. The overall occurrence of dermatological disorders in dogs in and around Jabalpur was 24.75 per cent while, the overall occurrence of *Malassezia dermatitis* was 3.56 per cent and among the suspected dogs, the occurrence was 14.40 per cent. Significantly a higher occurrence was noted in dogs of 6 to 9 years (32.26%) followed by 3 to 6 years (19.58%). Among different breeds, Labrador Retriever showed the highest occurrence (22.54%) followed by pugs (20.37%) while gender wise it was reported higher in females (17.49%) than males (12.68%). Further, the occurrence was observed significantly higher in the month of May (20.39%) followed by April (19.78%).

**Keywords:** *Malassezia dermatitis*, Jabalpur, cytological examination, occurrence, dogs.

## INTRODUCTION

Skin is the largest and most conspicuous body structure, serving as an effective morphological-physiological barrier between the animal and the environment (Muller *et al.*, 2013). Dermatological conditions represent the majority of cases in small animal clinics, comprising more than 20 per cent of the case load (Nauriyal, 2007). Managing canine dermal infections also substantially reduces the risk of zoonotic infections in dog owners.

*Malassezia dermatitis* is a common clinical disorder in dogs caused by the yeast, *Malassezia pachydermatis*, first implicated as a pathogen by Dufait, a Belgian Veterinarian in 1978 (Kumari, 2007). *Malassezia pachydermatis* a lipophilic, nonmycelial, unipolar budding commensal yeast is usually present in subdued numbers in the superficial muco-cutaneous sites and external ear canals in dogs (Bajwa, 2017).

In localised or generalised form, canine *Malassezia dermatitis* is clinically characterized by intense pruritus,

alopecia, hyperpigmentation, lichenification and visibly increased skin thickness (Mircean *et al.*, 2010). Genetic predisposition to *Malassezia dermatitis* in West Highland White Terriers, Shih Tzus, Basset Hounds, Boxers, American Cocker Spaniels, Dachshunds is on record (Bond *et al.*, 2020).

Definitive diagnosis is based on the detection of yeast usually by cytology examination of the cellophane tape impression smears, culture analysis, and polymerase chain reaction (Kumari, 2007). Considering the aforementioned information, the current investigation was designed to study the occurrence of *Malassezia dermatitis* in dogs.

## MATERIALS AND METHODS

### A. Location and place of work

The proposed study was carried out for six months i.e., from April 2022 to September 2022 at Department of Veterinary Medicine, Veterinary Clinical Complex

(VCC), College of Veterinary Science and Animal Husbandry, Nanaji Deshmukh Veterinary Science University Jabalpur, Madhya Pradesh (M.P.). Located at 23.17° latitude and 79.57° East longitude, Jabalpur is at 410.87 mean sea level in the southern part of the second agro-climatic zone, which includes Satpura Plateau and Kymore Hills. A tropical climate prevails here with an average annual rainfall of 1241 millimetres.

### B. Screening

For this study, a total of 2,974 dogs of either sex, irrespective of breed and age group, brought to the Veterinary Clinical Complex, College of Veterinary Science and Animal Husbandry, Jabalpur (M.P.) and different private clinics in and around Jabalpur were carefully screened based on history and presence of clinical symptoms indicative for *Malassezia* dermatitis viz., erythema, pruritus, hyperpigmentation, offensive odour, scales, crusts, alopecia, lichenification, etc. Out of 2,974 dogs, 736 dogs with dermatological disorders were screened for *Malassezia* dermatitis. For confirmation of Malasseziosis, dogs with dermatological disorders were subjected to cytological examination using Acetate tape impressions, Glass slide impression smears, and Roll swab smears. The prepared

smears were then stained for one minute with a drop of new methylene blue by the Diff- Quick method. After then, the stained slides were viewed using an oil immersion objective. The presence of more than five organisms per oil power field (x1000) was considered positive for the study.

### C. Statistical analysis

A chi-square test was used to analyze the collected data following the standard procedure described by Snedecor and Cochran (1994).

## RESULTS AND DISCUSSION

### A. Overall occurrence

A total of 2974 dogs were taken into consideration, out of which 736 dogs with visible signs of dermatological disorders were screened for *Malassezia* dermatitis. Out of 736 dogs suspected of *Malassezia* dermatitis, 106 were affected with *Malassezia* dermatitis. The overall occurrence of dermatological disorders in dogs in and around Jabalpur was 24.75 per cent (Table 1) while, the overall occurrence of *Malassezia* dermatitis was 3.56 per cent and among the suspected dogs, the occurrence was 14.40 per cent (Table 2).

**Table 1: Overall occurrence of dermatological disorders in dogs in and around Jabalpur.**

Total no. of dogs	Dogs with dermatological disorders	Occurrence (%)
2974	736	24.75

**Table 2: Overall occurrence of *Malassezia* dermatitis in dogs in and around Jabalpur.**

Particulars	Number screened	Number affected	Occurrence (%)
Total dogs	2974	106	03.56
Dogs with dermatological disorders	736	106	14.40

The result of the current study is consistent with those of Daniel (2021) who reported 14.70 per cent prevalence of *Malassezia* dermatitis in dogs. The findings are in partial agreement with Saranya (2011); Dohre *et al.* (2021) who reported a prevalence of 17.19 per cent and 17.75 per cent, respectively. On contrary, George *et al.* (2012); Valle (2014) documented a lower prevalence i.e., 7.83 per cent and 10.22 per cent of *Malassezia* dermatitis in dogs, respectively. Whereas, Mircean *et al.* (2010); Kumar *et al.* (2011); Suresh and Kumar (2017) documented a higher prevalence of 37.6 per cent, 30 per cent and 27.78 per cent, respectively.

The variation in occurrence rates with the results of previous workers might be ascribed to the wide disparity in the number of samples tested by the different workers under varying geo-climatic conditions and the immunological status of the dog patients.

### B. Age wise occurrence of *Malassezia* dermatitis in dogs

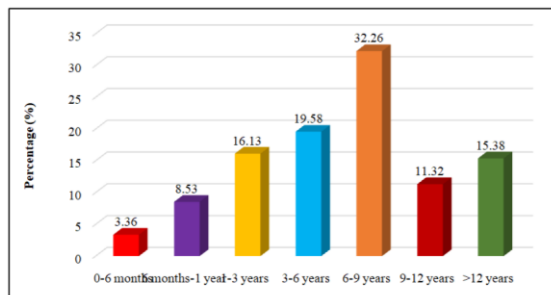
The age wise occurrence of *Malassezia* dermatitis in dogs revealed a highest i.e., 32.26 per cent (20 out of 62) occurrence in dogs of 6 to 9 years of age, followed by 19.58 per cent (28 out of 143) in 3 to 6 years of age, 16.13 per cent (35 out of 217) in 1 to 3 years of age,

15.38 per cent (2 out of 13) in more than 12 years of age, 11.32 per cent (6 out of 53) in 9 to 12 years of age, 8.53 per cent (11 out of 129) in 6 months to 1 year of age and lowest 3.36 per cent (4 out of 119) in 0 to 6 months of age, respectively. A significant difference ( $p < 0.01$ ) was noticed in age wise occurrence of *Malassezia* dermatitis in dogs in and around Jabalpur.

The result of the present investigation corroborated well with the findings of Dohre *et al.* (2021) who reported the highest rates of malasseziosis in dogs aged between 6 to 9 years. Similarly, Suresh and Kumar (2017) also reported that the age-related prevalence of *Malassezia* dermatitis was highest in dogs aged above 8 years. Contrarily, Conkova *et al.* (2011); Borkar (2014) documented that the risk group for malasseziosis was the geriatric animals (>9 years) with 63.30 per cent and 11.09 per cent prevalence of *Malassezia* infection. While, Jeong *et al.* (2005); Girao *et al.* (2006); Saranya (2011); Seetha *et al.* (2018); Daniel (2021) reported that the majority of dogs affected with *M. pachydermatis* were aged between 1 to 3 years. However, Nambi (2002) observed more common *Malassezia* infection in young puppies of less than one year of age and geriatric patients, presumably because of poor immune status. While Plant *et al.* (1992); Scott *et al.* (2001) found no

correlation between *Malassezia* dermatitis and the age of animals.

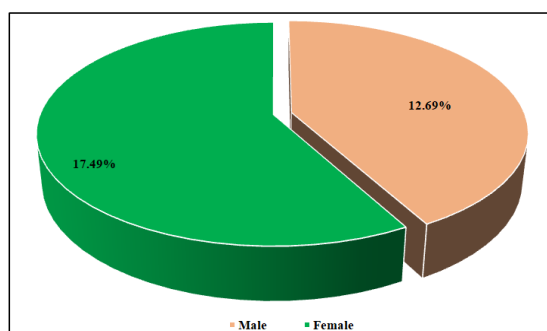
Although, there is variation in occurrence rates with the results of previous workers. The above findings must be considered in the light of possible epidemiological factors such as weather, seasonal variation, immune status, geographical location and managerial practices which may influence the occurrence of malasseziosis in dogs.



**Fig. 1.** Age wise occurrence of *Malassezia* dermatitis in dogs in and around Jabalpur.

#### C. Gender wise occurrence of *Malassezia* dermatitis in dogs

Out of the total screened dogs, 473 were males and 263 were females. 60 male dogs i.e., 12.68 per cent (60 out of 473) and 46 female dogs i.e., 17.49 per cent (46 out of 263) were afflicted with *Malassezia* dermatitis. A non-significant difference was observed in gender-wise occurrence of *Malassezia* dermatitis in dogs in and around Jabalpur.



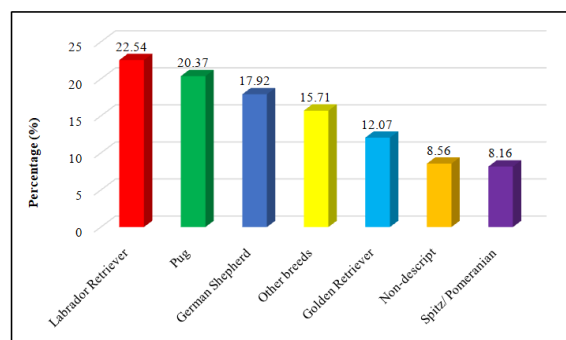
**Fig. 2.** Gender wise occurrence of *Malassezia* dermatitis in dogs in and around Jabalpur.

The observations documented in the present study are consistent with the former reports of Saranya (2011); Daniel (2021). Similarly, Mauldin *et al.* (1997) reported a higher prevalence of canine malasseziosis in spayed females (32.6 per cent) followed by intact males (25.6 per cent), females (24.4 per cent) and least in castrated males (17.4 per cent). In contrast, notably, Conkova *et al.* (2011); Kumar *et al.* (2011); Suresh and Kumar (2017); Seetha *et al.* (2018); Dohre *et al.* (2021) documented a higher prevalence of *Malassezia* dermatitis in male dogs than in comparison to females. They opined that androgens may promote higher biosynthesis and release of sebum, predisposing the males to *Malassezia* sub-clinical infection. However, Nardoni *et al.* (2004); Girao *et al.* (2006); Venkatramaiah (2006) reported that there was no significant difference in the prevalence of *Malassezia* dermatitis in both sexes.

The higher incidence of *Malassezia* dermatitis in females in the current study could be attributed to stress, particularly during oestrus, parturition and lactation, along with other hormonal changes and nutritional inadequacies. Ganguly *et al.* (2009) also reported that stress due to whelping and lactation can predispose to *Malassezia* yeast infection.

#### D. Breed wise occurrence of *Malassezia* dermatitis in dogs

The highest occurrence was recorded in Labrador Retrievers i.e., 22.54 per cent (32 out of 142), followed by Pug i.e., 20.37 per cent (11 out of 54), German Shepherds i.e., 17.92 per cent (19 out of 106), other breeds (Great Dane, Lhasa Apso, Beagle, Bull Mastiff, Rottweiler, Saint Bernard, Dachshund, Boxer, etc.) i.e., 15.71 per cent (11 out of 70), Golden Retriever i.e., 12.07 per cent (7 out of 58), non-descript i.e., 8.56 per cent (22 out of 257) and lowest in Spitz/ Pomeranian i.e., 8.16 per cent (4 out of 49). A significant difference ( $p < 0.01$ ) was noted in the breed wise occurrence of *Malassezia* dermatitis in dogs in and around Jabalpur.



**Fig. 3.** Breed wise occurrence of *Malassezia* dermatitis in dogs in and around Jabalpur.

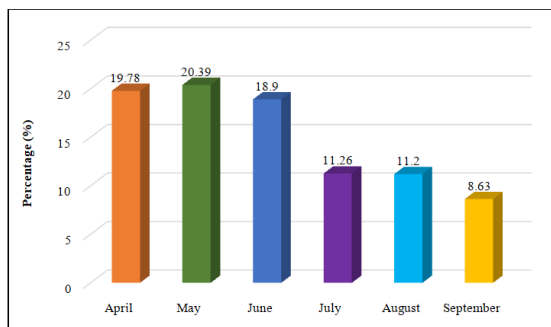
The findings in the present study correlate well with the results reported by Balasubramaniyam (2007); Kumar *et al.* (2011); Saranya (2011); Valle (2014); Suresh and Kumar (2017); Dohre *et al.* (2021) who reported a higher prevalence of malasseziosis in Labrador Retriever dogs, but at variance with the findings of other investigators (Scott *et al.*, 2001; Mircean *et al.*, 2010; Conkova *et al.*, 2011). On the other hand, Balappanavar and Vasanth (2013); Lakshmi and Padmaja (2013); Daniel (2021) noted a greater incidence in German Shepherd dogs.

The variation in breed wise prevalence might be due to the popularity and population distribution of the specific breed in the geographic location where the study was carried out. Higher occurrence among the Labrador Retriever in our study presumably was due to the owner's breed preferences and over presentation of the breed during the study period.

#### E. Month wise occurrence of *Malassezia* dermatitis in dogs

Although skin infections due to *Malassezia* dermatitis were reported throughout the year. Month wise occurrence was also recorded to know the occurrence of *Malassezia* dermatitis among different months. The overall occurrence of *Malassezia* dermatitis in different months was observed to be highest in May i.e., 20.39

per cent (21 out of 103), followed by 19.78 per cent (18 out of 91) in April, 18.90 per cent (24 out of 127) in June, 11.26 per cent (17 out of 151) in July, 11.20 per cent (14 out of 125) in August and lowest in September i.e., 8.63 per cent (12 out of 139), respectively. The month wise occurrence revealed a significant variation ( $p < 0.05$ ) among different months.



**Fig. 4.** Month wise occurrence of *Malassezia* dermatitis in dogs in and around Jabalpur.

The results presented in this study are very consistent with prior reports of Scott *et al.* (2001); Patterson and Frank (2002); Balasubramaniyam (2007); Saranya (2011); Balappanvar and Vasanth (2013); Valle (2014); Suresh and Kumar (2017) who recorded higher prevalence in summer months. Whereas, Cafarchia *et al.* (2005); Conkava *et al.* (2011) recorded that the prevalence of *Malassezia* dermatitis/otitis was relatively higher (52.6 per cent) in autumn, than in the other seasons.

It is believed that higher occurrence of *Malassezia* dermatitis during summer is related to allergy season, as well as increased humidity and moisture, which are considered to be major factors contributing to changes in the cutaneous microenvironment and favouring the proliferation of yeasts.

## CONCLUSIONS

The overall occurrence of *Malassezia* dermatitis in the dog population was 3.56%. However, 14.40% of occurrence was reported among dogs suspected of *Malassezia* dermatitis. Age-related occurrence was substantially greater in dogs aged 6 to 9 years (32.26%), breed wise occurrence was significantly higher in Labrador Retrievers (22.54%), and there was no significant difference in gender wise occurrence of *Malassezia* dermatitis in dogs. Further, the occurrence was observed significantly highest in the month of May (20.39%).

## FUTURE SCOPE

Thus, the current research offers pertinent data on the occurrence of *Malassezia* dermatitis in dogs at Jabalpur (M.P.). Future comprehensive research may be done to determine the relationship between different risk factors and the zoonotic potential of *Malassezia* dermatitis.

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**Conflict of interest.** None.

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