



International Journal of Veterinary Sciences and Animal Husbandry



ISSN: 2456-2912

NAAS Rating (2025): 4.61

VET 2025; 10(12): 654-658

© 2025 VET

www.veterinarypaper.com

Received: 15-10-2025

Accepted: 19-11-2025

Dr. S Subapriya

Associate Professor,

Department of Veterinary

Pathology, VCRI, Salem,

TANUVAS, Chennai, Tamil

Nadu, India

Dr. S Vairamuthu

Professor and Head (Retd.),

Centralized Clinical Laboratory,

Madras Veterinary College,

TANUVAS, Chennai, Tamil

Nadu, India

Dr. D Sumathi

Professor and Head,

Department of Veterinary

Clinical Medicine, VCRI,

Namakkal, Tamil Nadu, India

Dr. S Kavitha

Professor and Head,

Department of Veterinary

Clinical Medicine, Madras

Veterinary College, TANUVAS,

Chennai, Tamil Nadu, India

Dr. B Nagarajan

Professor and Head (Retd.),

Department of Veterinary

Preventive Medicine, Madras

Veterinary College, TANUVAS,

Chennai, Tamil Nadu, India

Corresponding Author:

Dr. S Subapriya

Associate Professor,

Department of Veterinary

Pathology, VCRI, Salem,

TANUVAS, Chennai, Tamil

Nadu, India

Malasseziosis in dogs: Cultural isolation and cytological characterization of *Malassezia pachydermatis* in canine dermatological disorders

S Subapriya, S Vairamuthu, D Sumathi, S Kavitha and B Nagarajan

DOI: <https://www.doi.org/10.22271/veterinary.2025.v10.i12j.2973>

Abstract

Malasseziosis was diagnosed in 162 dogs based on cytological examination and fungal culture of dermatological samples. Tape impression smears revealed characteristic peanut or footprint-shaped budding yeast cells on cytology, while fungal culture yielded creamy to pasty, white, convex colonies. Epidemiological analysis indicated a higher incidence among Labrador Retrievers and non-descript dogs, with a marked predominance in males and in dogs aged 1-5 and 5-10 years. Anatomical site-wise distribution showed the highest frequency of *Malassezia*-positive cases in samples collected from the ventral abdomen.

Keywords: Dog, Dermatitis, Canine dermatitis, Malasseziosis, *Malassezia pachydermatis*, Fungal culture, Tape impression smears

Introduction

Fungal dermatitis has emerged as an important cause of morbidity in dogs in the current decade, and owing to its chronic nature and tendency to recur after treatment, dermatomycosis remains a challenging and often frustrating condition for both pets and pet parents (Subapriya *et al.*, 2015) ^[1]. In addition to fungal agents, the etiological spectrum of canine dermatopathological conditions includes bacterial pathogens such as *Staphylococcus* spp., the principal cause of pyoderma; ectoparasites including ticks, mites, lice, and fleas; allergic or hypersensitivity reactions to dietary and environmental allergens; insect envenomation from wasps, scorpions, and related species; nutritional deficiencies; and endocrine disorders such as hypothyroidism and hyperestrogenism (Subapriya *et al.*, 2025) ^[2].

The genus *Malassezia* comprises unicellular yeasts that reproduce by budding, in which daughter cells arise from the mother cell and are separated by a broad base. Eidi *et al.* (2011) ^[3] documented 13 species in the genus *Malassezia*, of which 12 are lipid dependent (*M. furfur*, *M. sympodialis*, *M. globosa*, *M. obtusa*, *M. sloofiae*, *M. restricta*, *M. nana*, *M. dermatis*, *M. japonica*, *M. yamatoensis*, *M. caprae* and *M. equina*) and one non-lipid dependent species (*M. pachydermatis*). Among the various species of the genus *Malassezia*, *Malassezia pachydermatis* is of primary pathological significance in dogs presenting with dermatological complaints in clinical practice.

Malasseziosis may occur either as a sole or primary cause of the dermatopathological changes in dogs or can develop secondary to underlying infections and systemic disturbances. It is often associated with multiple predisposing factors, including infectious causes such as bacterial (pyoderma), fungal (dermatomycosis), parasitic (scabies and demodicosis) as well as non-infectious conditions such as cutaneous neoplasms, hypersensitivity reactions to food and ectoparasites (flea bites) and hormonal imbalances involving the pituitary, thyroid, and adrenal glands. In this context, Scott *et al.* (2005) ^[4] reported that *Malassezia* dermatitis is frequently associated with prior antibiotic therapy.

The predominant clinical manifestations of canine malasseziosis include alopecia, erythema, offensive malodour, pruritus, scaling, crust formation, papules, vesicles, pustules, nodules,

hyperpigmentation, and lichenification, with the severity and pattern of lesions varying according to the intensity and duration of infection (acute or chronic). Mircean *et al.* (2010)^[5] reported that pruritus in *Malassezia pachydermatis* infection in dogs may result from cutaneous inflammation induced by the release of enzymes such as lipases and proteases, which contribute to inflammation through lipolysis and proteolysis, respectively. Valle (2014)^[6] further attributed clinical signs including erythema, exudation, scaling, alopecia, and offensive odour seen in canine Malassezia dermatitis to the release of inflammatory chemical mediators at the site of infection, such as serotonin, prostaglandins, peptides, and leukotrienes. Pertaining to the distribution of cutaneous lesions, canine malasseziosis most commonly affects the interdigital spaces, ventral neck, axillae, perineal region, external ear canal, and skin folds (Hnilica and Patterson, 2017)^[7].

Diagnostic approach for clinical cases of canine malasseziosis include cytological evaluation of tape impression smears, isolation and identification of *Malassezia* organisms through fungal culture of clinical samples on suitable media, histopathological examination of skin biopsy specimens, and molecular detection using polymerase chain reaction (PCR). With respect to the use of histopathology as a diagnostic aid, George and Yathiraj (2010)^[8] reported that skin biopsies have limited sensitivity and diagnostic utility for detecting *Malassezia* species, as the organisms predominantly reside within corneocytes, which are often lost during tissue processing, resulting in failure of organism detection.

The major differential diagnoses of malasseziosis in dogs include bacterial dermatitis (pyoderma), parasitic infestations such as scabies and demodicosis, dermatomycoses including dermatophytosis, and dermatological lesions associated with endocrine disturbances; therefore, these conditions should be ruled out, and the diagnosis of malasseziosis should be confirmed through detailed clinicopathological investigation.

Effective and rationale diagnosis of fungal involvement in dermatitis requires a coordinated effort combining the clinician's experience with the expertise of laboratory personnel; as most opportunistic fungal infections arise from exogenous fungi present in the environment, both aseptic collection of suspected samples as well as their prompt inoculation onto appropriate mycological media are critical factors determining the successful isolation of the causative fungal agents (Subapriya *et al.*, 2015)^[9].

Considering the zoonotic potential of *M. pachydermatis*, Morris *et al.* (2005)^[10] detected the *Malassezia* organisms on the hands of 93% of dog owners in their study, highlighting the risk of zoonotic transmission through mechanical carriage. Against this background, the present study was undertaken to examine the cytological and cultural characteristics of *Malassezia* organisms isolated from clinical cases of canine dermatitis and to evaluate the influence of predisposing factors such as breed, sex, and age on the occurrence of

canine malasseziosis.

Materials and Methods

Swabs, crusts, scales and scabs collected from cutaneous lesions were inoculated onto Sabouraud's Dextrose Agar (SDA) for the isolation and identification of fungal etiological agents. The culture plates were incubated at 25 °C and 37 °C for 4-6 weeks and examined on alternate days from both obverse and reverse sides to record gross colony characteristics, including colour, texture, margin morphology, and growth rate. For microscopic identification, representative colonies were stained with lactophenol cotton blue (LPCB) stain and examined under low and high-power magnification to observe characteristic fungal structures such as budding cells, sporangia, conidia, phialides etc. following the methodology described by Subapriya *et al.* (2015)^[9].

Tape impression smears were collected from multiple sites exhibiting gross dermatological lesions by gently pressing adhesive tape onto the skin and then mounting it onto clean glass slides. The smears were stained using the Leishman-Giemsa (LG) technique and examined microscopically for the presence of etiological agents, including bacterial and fungal elements such as budding yeasts, spores, and hyphae, following the methodology described by Subapriya *et al.* (2025)^[11].

Results and Discussion

Incidence

During the study period, 162 cases of malasseziosis were confirmed through mycological culture and microscopic evaluation of tape impression smears collected from dogs presenting with dermatopathological manifestations. The clinical signs recorded from sample processing requisition slips included alopecia, erythema, hyperpigmentation, pruritus, malodour, scaling, and crusting, with hyperpigmentation being the most frequently reported manifestation (64 cases; 39.5%), followed by alopecia (46 cases; 28.4%). The highest number of positive cases was identified from samples collected from the ventral abdominal region (84 cases; 51.8%), followed by lesions on the limbs and other body sites.

Breed

Malasseziosis was identified across eleven dog breeds, with the highest incidence recorded in Labradors (n = 54) (33.33%) and non-descript dogs (n = 40) (24.69%), followed by other breeds (Fig. 1). The over-representation of malasseziosis in Labradors is consistent with the findings of Dohre *et al.* (2021)^[12], who reported a higher prevalence of the disease in this breed. Mircean *et al.* (2010)^[5] also noted a predisposition in breeds such as German Shepherds and Dachshunds, which aligns with our observations of twelve cases each in German Shepherd and Dachshund dogs.

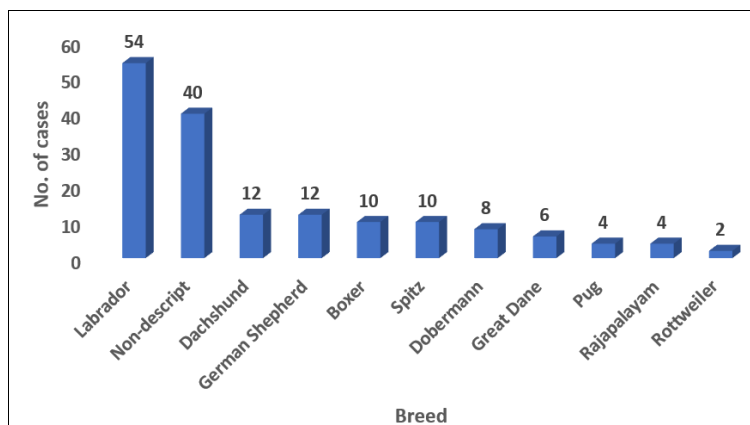


Fig 1: Breed wise incidence of canine malasseziosis (n=162)

Sex

With respect to sex-wise occurrence, a higher incidence of malasseziosis was recorded in male dogs (n = 92) (56.79%) compared to females (n = 70) (43.21%) (Fig. 2). This difference likely reflects the higher number of male dogs in

the study population rather than a true sex predisposition. In agreement, Carlotti and Dassot (1996)^[13] reported no sex-related predisposition for malasseziosis in their study on canine *Malassezia* dermatitis in France.

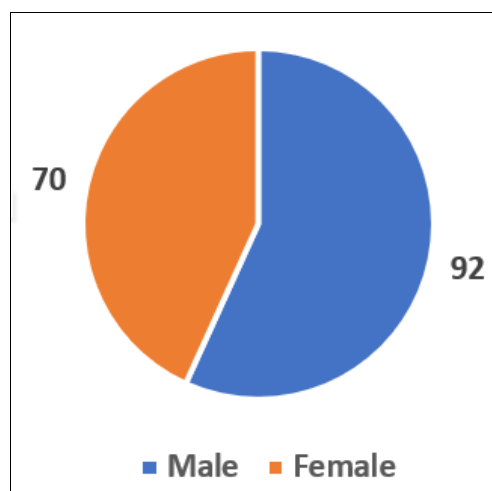


Fig 2: Sex wise incidence of canine malasseziosis (n=162)

Age

In terms of age-wise distribution, the highest number of malasseziosis cases was recorded in adult dogs aged 1-5 years (n = 94) (58.02%), followed by those aged 5-10 years (n = 44) (27.16%), dogs under one year of age (n = 20) (12.35%) and senior dogs over 10 years (n = 4) (2.47%) (Fig. 3). The overall age range of affected dogs was 7 months to 12 years,

with the youngest case observed in a seven-month-old German Shepherd and the oldest in a 12-year-old non-descript dog. Consistent with our findings, Wagner and Schadler (2000)^[14] reported that malasseziosis occurred most frequently in adult dogs (58.33%) and least frequently in puppies (2.08%).

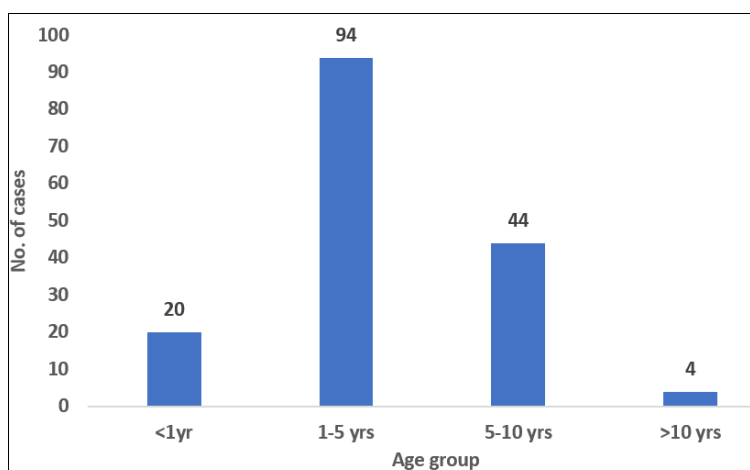


Fig 3: Age wise incidence of canine malasseziosis (n=162)

Fungal culture

Fungal culture on Sabouraud's Dextrose Agar (SDA) produced white, convex, creamy to pasty colonies of *M. pachydermatis* after three days of incubation at 37 °C (Fig. 4). Microscopic examination of the colonies using lactophenol cotton blue (LPCB) staining revealed round to oval budding yeast cells. In the present study, fungal culture combined with cytological evaluation of tape impression smears and LPCB-stained fungal isolates proved effective in diagnosing all 162 cases of cutaneous malasseziosis. Consistent with our findings, Eluk *et al.* (2003) [15] reported that adhesive tape sampling coupled with staining and culture was superior to other methods for the diagnosis of *Malassezia* dermatitis.

Cytological findings

Cytological evaluation of Leishman-Giemsa (LG)-stained tape impression smears revealed budding mother and daughter yeast cells with broad-based attachment, exhibiting the characteristic peanut- or footprint-like appearance of *M. pachydermatis* (Fig. 5, 6). The yeasts were observed singly, in small clusters, or in large numbers within a single microscopic field, either in the presence or absence of superficial squamous epithelial cells (corneocytes). Following the guidelines of Pinchbeck (2002) [16], a mean of ≥ 1 yeast organism per oil immersion field (OIF) across 10 consecutive OIFs (Oil Immersion Field) containing corneocytes was considered diagnostic for malasseziosis.



Fig 4: Fungal culture - SDA medium - creamy to pasty textured, whitish *Malassezia* colonies

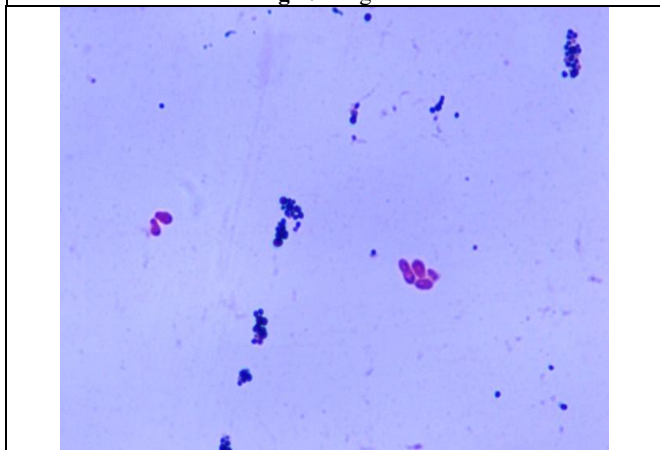


Fig 5: Tape impression smear - Peanut shaped budding *Malassezia* organisms - LG stain x 100

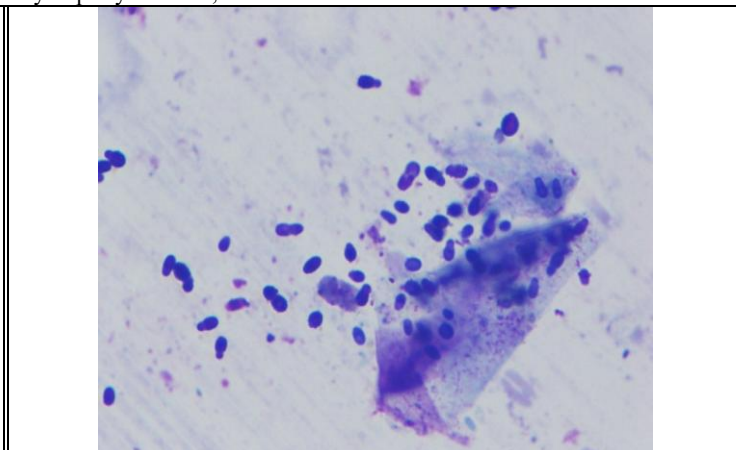


Fig 6: Tape impression smear - Peanut shaped budding *Malassezia* organisms - Squamous epithelial cell - LG stain x 100

Haematology

Haematological analysis of *Malassezia*-confirmed cases revealed elevated total leukocyte counts in 124 dogs (76.54%), with neutrophilia accounting for the leukocytosis in 99 cases (61.11%). Hromada *et al.* (2005) [17] attributed this increase to inflammatory changes in the skin associated with *Malassezia* infection. Anaemic changes were observed in 45 cases (27.78%), indicated by reductions in haemoglobin concentration (g/dL), packed cell volume (%), and total erythrocyte count (million/cmm) on automated haematology analysis, which were corroborated by microscopic evaluation of Leishman-Giemsa-stained peripheral blood smears. Supporting these findings, Takahira (2009) [18] reported that mild to moderate non-regenerative anaemia is the most common form in dogs with infectious diseases, including fungal infections, and attributed it to decreased erythrocyte production and increased erythrocyte removal via immunologic mechanisms or oxidative damage. The

haematological changes recorded in the study are represented in Fig.7.

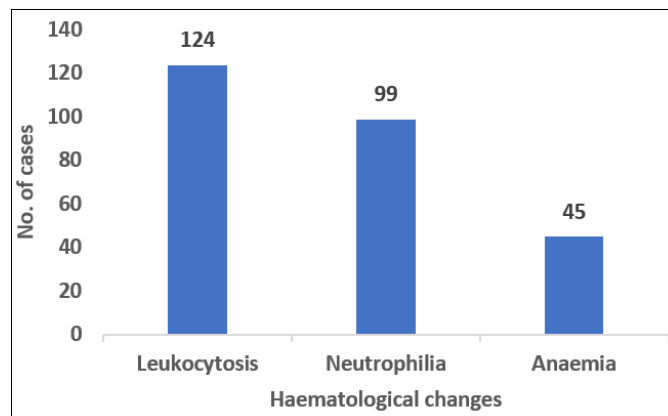


Fig 7: Haematological changes in canine malasseziosis (n=162)

Conclusion

The present study proclaimed *Malassezia pachydermatis* as a significant fungal pathogen associated with canine cutaneous malasseziosis, with diagnosis reliably achieved through cytological examination of tape impression smears and fungal culture of dermatological samples on Sabouraud's Dextrose Agar. The characteristic peanut or footprint shaped budding yeast cells observed cytologically, along with creamy to pasty white colonies on culture, proved to be consistent and dependable diagnostic indicators of *Malassezia* organisms. Epidemiological analysis demonstrated a higher occurrence of malasseziosis in Labrador and non-descript dogs, a predominance in males, and increased susceptibility among adult dogs aged 1-5 and 5-10 years, with ventral abdomen being the most frequently affected anatomical site.

Importantly, canine malasseziosis occur as a secondary or opportunistic condition rather than a standalone disease. Hence, in malasseziosis affected dogs, concurrent disorders such as bacterial pyoderma, parasitic infestations (scabies and demodicosis), dermatophytosis, allergic dermatitis, and endocrine disturbances must also be actively investigated and addressed. Failure to identify and manage these underlying conditions may result in poor therapeutic response or frequent relapse. Therefore, a comprehensive clinicopathological approach combining cytology, culture and evaluation of predisposing factors and concurrent pathologies is essential for effective treatment, long-term control, and improved clinical outcomes in dogs with *Malassezia*-associated dermatitis.

Acknowledgement

The authors are thankful to the Director of Clinics, TANUVAS, Madras Veterinary College Campus, Chennai-07 for the support provided during the study period.

Conflict of Interest

Not available

Financial Support

Not available

References

- Subapriya S, Senthil NR, Vairamuthu S, Nagarajan B, *et al.* Opportunistic fungi as etiologic agents of dermatitis: a case of *Alternaria* fungal infestation in canine. *Int J Livest Res.* 2015;5(4):24-28.
- Subapriya S, Vairamuthu S, Yamini H, Jasmin, *et al.* *Microsporium canis* dermatophytosis in pet dogs and cats in Chennai. *Agric Mechan Asia Afr Lat Am.* 2025;56(8):21303-21314.
- Eidi S, Khosravi AR, Jamshidi S. A comparison of different kinds of *Malassezia* species in healthy dogs and dogs with otitis externa and skin lesions. *Turk J Vet Anim Sci.* 2011;35(5):345-350.
- Scott DW, Miller WH, Griffin CE. *Small animal dermatology.* 6th ed. Philadelphia: WB Saunders; 2005. p. 543-666.
- Mircean V, Titilincu A, Mircean M, Magdaş C. *Malassezia pachydermatis* infection in dogs: a retrospective study of epidemiology, clinical and cytological results in Cluj, Romania. *Scientia Parasitologica.* 2010;11(3):153-163.
- Valle R. Clinico-diagnostic and therapeutic studies on *Malassezia* dermatitis in dogs. M.V.Sc. thesis. Tirupati: Sri Venkateswara Veterinary University; 2014.
- Hnilica KA, Patterson AP. *Small animal dermatology: a color atlas and therapeutic guide.* 4th ed. St Louis: Elsevier; 2017.
- George S, Yathiraj S. Malasseziosis in dogs. *J Commonw Vet Assoc.* 2010;26(2):23-26.
- Subapriya S, Nagarajan B, Kavitha S, Senthil NR, *et al.* Emerging incidence of fungal dermatitis in canines caused by *Curvularia* spp.: an opportunistic fungal pathogen. *Int J Adv Res Biol Sci.* 2015;2(4):264-267.
- Morris DO, Q'Shea K, Shofer FS, Rankin S. *Malassezia pachydermatis* carriage in dog owners. *Emerg Infect Dis.* 2005;11:83-88.
- Subapriya S, Sokkalingam R, Ramesh S. Cryptococcosis in a Persian cat: cytological and cultural confirmation of *Cryptococcus neoformans*. *Int J Vet Sci Anim Husb.* 2025;10(12):496-498.
- Dohre K, Dhoot VM, Bhojne GR, Panchbhair CG, Upadhye SV, Chaudhari SP, *et al.* Prevalence of *Malassezia* infection in dogs of Nagpur city. *Int J Curr Microbiol Appl Sci.* 2021;10(2):2269-2273.
- Carlotti DN, Dassot CL. *Malassezia* dermatitis in the dog: review and retrospective study of 12 cases treated with azole derivatives. *Prat Med Chir Anim Comp.* 1996;31:297-307.
- Wagner R, Schadler S. Qualitative study of *Malassezia* species colonisation in young puppies. *Vet Rec.* 2000;147:192-194.
- Eluk OAJ, Baker KP, Fuller H. Comparison of two sampling techniques for the detection of *Malassezia pachydermatis* on the skin of dogs with chronic dermatitis. *Vet J.* 2003;165:119-124.
- Pinchbeck LR, Hillier A, Kowalski JJ, Kwochka KW. Comparison of pulse administration versus once-daily administration of itraconazole for the treatment of *Malassezia pachydermatis* dermatitis and otitis in dogs. *J Am Vet Med Assoc.* 2002;220:1807-1812.
- Hromada R, Posivak J, Posivakova S, Sasakova N, *et al.* Malasseziosis and immunity. *Folia Vet.* 2005;49:37-39.
- Takahira RK. Chronic non-regenerative anemia: a challenge? In: *Proceedings of the 34th WSAVA Congress;* 2009 Jul 21-24; Sao Paulo, Brazil.

How to Cite This Article

Subapriya S, Vairamuthu S, Sumathi D, Kavitha S, Nagarajan B. Malasseziosis in dogs: Cultural isolation and cytological characterization of *Malassezia pachydermatis* in canine dermatological disorders. *International Journal of Veterinary Sciences and Animal Husbandry.* 2025; 11(12): 654-658.

Creative Commons (CC) License

This is an open-access journal, and articles are distributed under the terms of the Creative Commons Attribution-Non Commercial-Share Alike 4.0 International (CC BY-NC-SA 4.0) License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.