Skin scrapings are part of the basic database for all skin diseases. There are two types of skin scrapings, superficial and deep. Superficial scrapings do not cause capillary bleeding and provide information from the surface of the epidermis. Deep skin scrapings collect material from within the hair follicle; capillary bleeding indicates that the sampling was deep enough. Skin scrapings are used primarily to determine the presence or absence of mites. Skin scrapings are best performed using a skin-scraping spatula, which is a thin metal weighing spatula commonly found in pharmacy or chemical supply catalogs. These spatulas are reusable and do not cause injury [1]. Skin scrapings help diagnose fungal infections and scabies. For fungal infection, scale is taken from the border of the lesion and placed onto a microscope slide. Then a drop of 10 to 20% potassium hydroxide is added. Hyphae, budding yeast, or both confirm the diagnosis of tinea or candidiasis. For scabies, scrapings are taken from suspected burrows and placed directly under a coverslip with mineral oil; findings of mites, feces, or eggs confirm the diagnosis [1,2]. The skin scraping can be classified into two, superficial and deep scraping.

**Superficial skin scraping**

Superficial scraping used to identify surface mites and multiple scrapings should be taken to increase the likelihood of ectoparasites (Cheyletiella, Sarcoptes, Psoroptes, Otodectes, and Demodex mites, fleas and lice) detection [2,3].

The procedure of superficial scraping [3-6]:

- Remove the hair coat in the area by gentle clipping and after clipping the hairs the are has to be sterilized with antiseptics (chlohexidine, soap)
- A few drops of liquid paraffin can be applied and spread over the skin scraping site, then scraping with a blunt scalpel blade

**Deep skin scraping**

Deep skin scraping is important in the diagnosis of burrowing and deep follicular mites such as Sarcoptes scabiei and Demodex sp. The technique is repeated until capillary blood oozes out and multiple sites should be scraped to maximize detection of ectoparasites.

Procedure [2,3,7]:

- The hair should be clipped with scalpel blade. Holding the blade perpendicular to skin and blade is gently passed over a small area of lesional skin in a sweeping pattern. The skin should be pinched firmly between the thumb and forefinger to help extrude the parasite from deeper epidermal layer.
- Place the scalp blade with material removed into petri dish or other container
- The collected material is mounted onto glass slide in liquid paraffin or potassium hydroxide.
- Cover aslide should be applied into sample collected on slide and examine it under low power objective of microscope
Fungal examination of skin scrapings is indicated when fungal infection of skin is suspected. The site of collection of scrapings should be the most active lesion at skin. Since some fungal infections spread towards the periphery, it is advisable to collect the scrapings from centre as well as from periphery of the lesion. When dermatophytes fungi affect skin and hair of the animal it will produce white greyish circular lesion accompanied with crust, scale, hyperkeratosis and alopecia. Those lesions normally found in the face, neck, chest, leg and body of the animal [8]. Before collection of the scrapings, skin is swabbed with 95% alcohol or spirit to remove any saprophytic organism. The scalpel should be moistened with mineral oil and the skin scrapped deeply to include hairs.

The skin scrapings are collected in sterilized petridishes containing 10% potassium hydroxide or sodium hydroxide. Fungi are usually isolated on Sabouraud dextrose agar which inhibits growth of most bacteria. The addition of chloramphenicol and cycloheximide increases sensitivity by inhibiting some of the fast growing contaminating bacteria and other microorganism [10]. Hair plucking can be collected and inoculated using sterile forceps into one of two media like sabouraud’s agar or dermatophyte test medium. The culture should be kept at room temperature for 7-10 days and checked for appearance of clony of white colony and red coloration of the medium, which indicates presence of dermatophytes. However, if no growth after 3weeks, the sample can be negative of ring worm [3].

Sabouraud’s dextrose agar (SDA) and isolated selective media containing cycloheximide, penicillin and streptomycin were used in most diagnostic laboratories until point-of-care fungal culture medium was developed. In the late 1960s Dermatophyte Test Medium (DTM) was developed for field evaluation by paramedical personnel for skin infections in military forces operating in the tropics [11]. Dermatophyte Test Medium is a nutrient growth medium with antibiotics to inhibit bacterial and contaminant fungal overgrowth and a colour indicator to aid in the early recognition of possible dermatophyte species. The colour change in the medium from yellow to red is the result of a pH change triggered by fungal growth. The first published article concluded that colour change alone was diagnostic of a dermatophyte, but numerous studies shortly thereafter documented a wide range of contaminants that also cause a red colour change in the medium [12,13].

The Wood’s lamp has UV light, which is directed on the intact skin or on the scrapings collected in petridishes (Figure 2). If the fungus microsorpus is present, it gives yellow-green fluorescence while no fluorescence is observed in negative or trichophyton fungal infection of skin. The Wood’s lamp is a point-of-care diagnostic tool, with which a test can be performed in clinic. It is an ultraviolet lamp that was invented in 1903 by Robert W. Wood as a light filter used in communications during World War I.

References


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