APPLICATION OF SWEET ALMOND OIL AS AN OIL IMMERSION LENS FOR MORPHOLOGICAL DIAGNOSIS OF BACTERIA FUNGI, PARASITES, CYTOLOGY AND TISSUE HISTOLOGY

At present, sedral oil with a refractive index of 1.515-.017 is used as an oil immersion lens for microscopic diagnosis and morphological studies of bacteria, fungi, parasites and cytology of different tissues in almost all medical as well as research laboratories.[1,2] The aim of this project was the application of sweet almond oil with a

refractive index of 1.486±0.003 as an oil immersion lens. For this purpose, 40 samples (each sample was 100 mL) of sweet almond oil manufactured by Pharmachemi Company of Iran underwent chemical analysis and were tested for physical properties. The chemical composition of sweet almond oil was tested to determine the amount of oleic acid, palmetic acid, myristic acid and linoleic acid. The physical properties of sweet almond oil were tested for refractive index, specific gravity, iodine number, saponification number and unsaponification number.[3-7] The stability of sweet almond oil against light and temperature was also studied. The sedral oil manufactured by Zeiss Company, Germany was used as a control immersion lens oil in this study. For practical studies, one or two drops of sweet almond oil as well as sedral oil were added to fixed and stained slides of Gram negative and positive bacteria, fungi, parasites, and blood smears separately, according to instructions used routinely in laboratories. The microscopic observations were carried out by using a 100 power oil immersion objective lens. After using both oil immersions, xylol was used for removing the oil and cleaning the objective lenses. The results of the chemical analysis of sweet almond oil manufactured by Pharmachemi Company revealed 78% oleic acid, 4.8% palmitic acid, 16% linoleic acid, and 1.2% myrsitic acid.

The physical properties of sweet almond oil showed a refractive index of 1.486±0.003, specific gravity .914, iodine number 94-103, saponification number 193±2 and unsaponification number 0.6. The sweet almond oil showed good stability at room temperature. The chemical composition of sweet almond oil did not show any change when exposed to light for 24 hr.

We have observed very good morphological structures of stained bacteria, parasites, and stained blood smears when almond oil was used as an immersion lens oil. The results of microscopic observations were similar to that of the control sedral immersion lens oil manufactured by Zeiss, Germany. After application of almond oil on the fixed and stained slides, no colour changes of stains or any other effect was observed. Almond oil is not sticky material and is easily removed by xylol. One year of studies showed that sweet almond oil has no effect on the objective lens of the microscope.

The important characteristic of sedral oil is its refractive index, which is 1.515-0.017–close to the refractive index of glass (1.52). Therefore, light rays from the condensor pass through the objective lens at the same refractive index, resulting in clear pictures of morphology and structures of the microorganism or cytology of the different tissues being examined. The refractive index of sweet almond oil is 1.486±0.003 which is very close to that of sedral oil; thus good morphology and the structural characteristics of bacteria, parasites, and fungi and tissue cytology can be observed. Both sedral oil and sweet almond oil could be removed by xylol. Almond oil is a safe substance and is used in medicine for different purposes.

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