weeks. In this experiment, hair papilla cells at passage 3 or less were used. First, the hair papilla cells were seeded in a 24-well microplate for cell culture (from Sumitomo Bakelite Co., Ltd.) at 10,000 cells/well and cultured for 3 days by using a test solution A that was a hair papilla cell culture medium to which D-chiro-inositol dissolved in PBS was added at a final concentration of 0.1 wt%, a test solution B that was a hair papilla cell culture medium to which myo-inositol dissolved in PBS was added at a final concentration of 0.1 wt%, and a negative control that was a hair papilla cell culture medium to which PBS alone was added. The number of cells after culturing for 3 days was counted by using a hemocytometer, and proliferation rates in test solution A and the test solution B were calculated relative to 100% for a proliferation rate in the negative control as 100%. The results are shown in Fig. 18.

[0085] As is clear from Fig. 18, in the case of culturing by using the test solution A, a proliferation rate was increased significantly compared with the case of culturing by using the negative control. Hence, the hair papilla cell proliferation promoting activity of D-chiro-inositol was confirmed. Meanwhile, in the case of culturing by using the test solution B, no significant difference was observed, and hence, the hair papilla cell proliferation promoting activity of myo-inositol was not confirmed.

[0086] Example 6 Hair Papilla Cell Proliferation Test by Three-dimensional Culture

In a three-dimensional culture method, cell proliferation is calculated from the area of three-dimensional cell spheroids which simulate conditions further close to in vivo ones, and hence, cell proliferation can be evaluated in terms of integrated two factors of cell growth and an increase in cell count.

[0087] In this Example, hair papilla cells prepared in a similar manner to Example 5 were seeded in a 96-well U-bottom microplate for cell culture (from Sumitomo Bakelite Co., Ltd.) at 6,000 cells/well and centrifuged with a plate centrifuge at room temperature and at a rotating speed of 1,000 rpm for 1 minute to yield three-dimensional hair papilla cell spheroids. The spheroids were cultured for 3 days by using each of test solutions A1 to A3 that were hair papilla cell culture media to which D-chiro-inositol dissolved in PBS was added at a final concentration of 0.05 wt%, 0.1 wt%, or 1 wt%; test solutions B1 to B3 that

were hair papilla cell culture media to which myo-inositol dissolved in PBS was added at a final concentration of 0.05 wt%, 0.1 wt%, or 1 wt%; and a negative control that was a hair papilla cell culture medium to which PBS alone was added. The spheroids after culturing for 3 days were imaged by using a VHX2000 digital microscope (Keyence Corporation), and the area of the spheroids was calculated by using a digital microscope analysis tool. By calculating a spheroid area increase rate in the test solutions A1 to A3 and B1 to B3, relative to an area increase rate in the negative control as 100%, the proliferation of hair papilla cells in conditions further close to in vivo condition was quantified. The results are shown in Fig. 19.

[0088] As is clear from Fig. 19, in the cases of culturing by using the test solutions A1 to A3, the spheroid area was increased significantly compared with the case of culturing by using the negative control. Hence, the hair papilla cell proliferating activity of D-chiro-inositol was confirmed at all the tested final concentrations of 0.05 wt%, 0.1 wt%, and 1 wt%. Meanwhile, no significant differences were observed in the cases of culturing by using the test solutions B1 to B3, and hence, the hair papilla cell proliferation promoting activity of myo-inositol was not confirmed at any of the tested final concentrations of 0.05 wt%, 0.1 wt%, and 1 wt%. Here, from the degree of the spheroid area increase rates, an increase in cell count is considered to largely contribute to the proliferation of hair papilla cells in the cases of culturing by using the test solutions A1 to A3.