September 4, 2012
Toyobo Co., Ltd.

Toyobo Develops the World's First Cosmetic Ingredient Extracted from Soybean Germ that Contain Polyamine

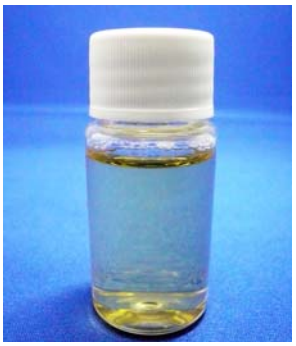
Promising Applications as an Aging Care Material in Cosmetics

Toyobo has recently developed "PHYTOPOLYAMINE®-S," an ingredient for cosmetics derived from soybean germ that contain polyamine*. Toyobo began marketing this ingredient as an aging care material in July this year.

*Polyamine: Refers generally to amino group straight-chain aliphatic compounds. These include putrescine, spermidine, and spermine.

1. Background for Development

It has been known for many years that polyamines are active in stabilizing cell membranes, promoting the synthesis of nucleic acid and proteins, enzyme activation, and promoting cell division. In recent years, it has been reported that polyamines have properties that extend life spans as well as restrain lifestyle diseases, allergies, and menopausal disorders. As a result, they have drawn attention as health food ingredients in the food products field. Polyamines are contained in food, human organs, and elsewhere, and, particularly because they are found in relatively large quantities in human skin, they are believed to be involved in the formation of skin and protecting it from ultraviolet rays.



PHYTOPOLYAMINE®-S

Toyobo discovered that polyamines improve plant yields and increase resistance to environmental stress (including low temperatures, drought, and high salinity). Moreover, Toyobo has confirmed that polyamines work to prolong the lives of various types of fruit and flowers (including roses) (Please refer to the photographs below.). In the course of conducting related research, Toyobo developed technology for extracting polyamines efficiently and has

accumulated considerable knowledge related to polyamines over many years of research work.

Difference in freshness of roses 10 days after cutting

With the polyamine

Water (without the

Recently, Toyobo discovered that high concentrations of polyamines are contained in soybean germ. By manufacturing polyamines efficiently using a special method for extracting polyamines from soybean germ, Toyobo has become the first to develop a cosmetic ingredient, PHYTOPOLYAMINE®-S, that is extracted from soybean germ that contain polyamine.

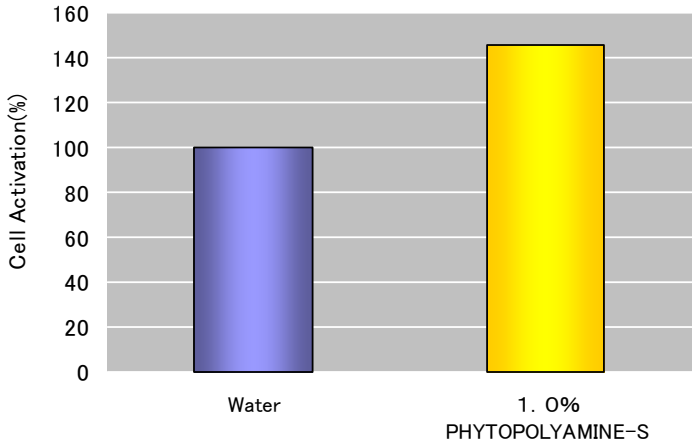
2. Features of PHYTOPOLYAMINE®-S

Using model experiments that employ human skin fibroblast*, Toyobo has confirmed that PHYTOPOLYAMINE®-S is effective in stimulating cell activation** and promoting the production of collagen (Refer to Graph 1 and Graph 2). Since the same kinds of positive effects are expected when this substance is applied to human skin, the use of PHYTOPOLYAMINE®-S is regarded as being promising as an aging care material for use in cosmetics.

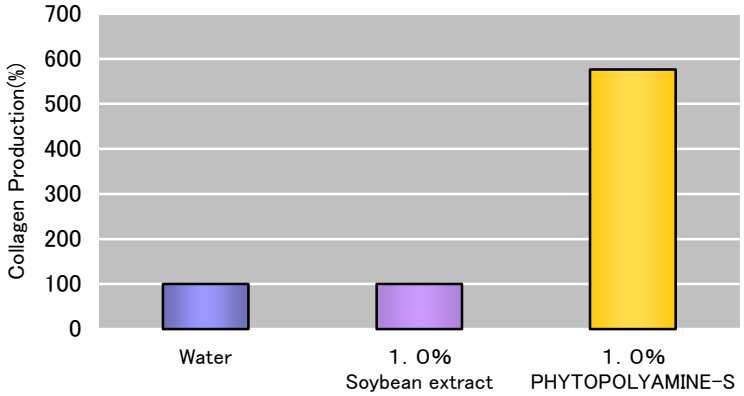
*Human skin fibroblast, which is widely used for model experiments on human skin, consists of cells that have been cultured from skin that has been separated from the body.

**Effectiveness in cell activation is the increase and/or decrease in cell activity as measured by the volume of cell respiration.

Graph1: Comparison of Human Skin Fibroblast in Cell Activation



Graph2: Comparison of Human Skin Fibroblast in the Production of Collagen



3. Outlook

In recent years, the demand for ingredients derived from natural substances rather than chemical compounds has been rising because of the need for safety in cosmetic ingredients and because of other considerations. Toyobo began sales of PHYTOPOLYAMINE®-S in July 2012, and domestic cosmetics manufacturers have already decided to adopt this ingredient.

Toyobo has set an annual target of ¥500 million in sales of polyamine ingredients by 2017.

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