HIGH-VALUED COSMETIC BRA

SUN TEKSTIL R&D DEPARTMENT

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Who we are??

- Sun Tekstil R&D Department has established in 2010 with 58 employees which has certified and supported by Republic of Turkey Ministry of Science, Industry and Technology.
- R&D Department collaborates 5 companies which belong to Sun Group.
- There are 7 fields of study;

-Technical Textiles
-Medical Solutions
-Automotive Textiles
-Composite
-Bedding Solutions
-Defense Solutions
-Coating&Lamination Solutions

- This project was funded by Republic of Turkey Ministry of Science, Industry and Technology Industrial Thesis Supporting Program (SAN-TEZ) with ‘01616.STZ.2012-2’ project number.

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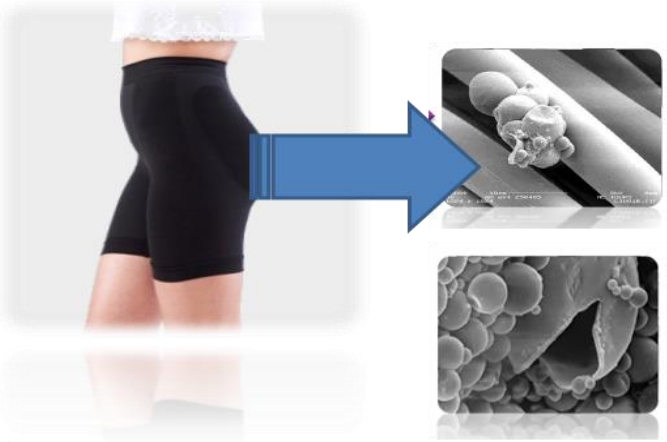
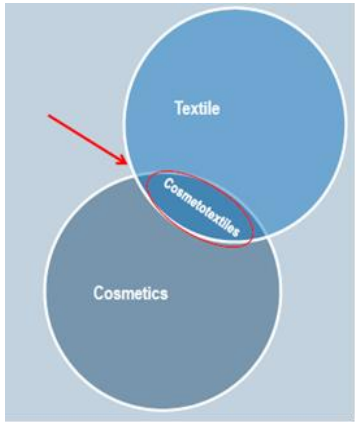
- Introduction
- Materials & Methods
- Results & Discussion
- Conclusion

INTRODUCTION
Cosmetotextiles

- Cosmetic textiles, a rapidly growing part of the functional textiles used in medical and health areas, mean new target audience and markets for textile industry.
- Cosmetotextiles are textile materials which release substances or solutions in given time intervals and are claimed to have properties such as cleaning, perfuming and protecting.

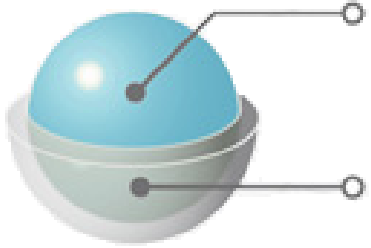




INTRODUCTION

Cosmetotextiles - Technology

- Cosmetotextile products combine textiles and cosmetics, thus consumers can benefit from both of them.
- Cosmetotextiles are designed to transfer an active substance for cosmetic purposes.
- To achieve functional effects, microencapsulation technology appears as an alternative way to provide satisfactory performance with increased durability.



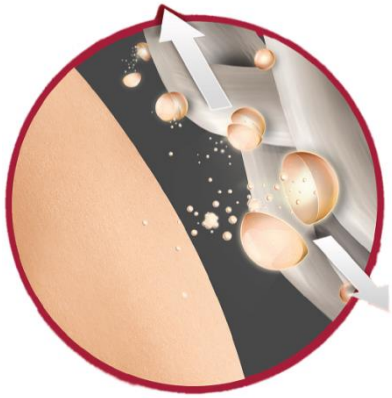
Interior
Active cosmetic substance

Exterior
Protective membrane, wall or shell

INTRODUCTION

Cosmetotextiles - Technology

- Cosmetic ingredients in cosmetotextiles are released over time due to the natural movements of the body or the friction and the pressure between skin and fabric. Therefore garments' structure and construction should be investigated besides the effectiveness of the ingredients.



INTRODUCTION

Scope

- Within scope of the project, a seamless knitted bra having plumping, lifting and moisturizing effects was designed and manufactured with microencapsulated cosmetic ingredients.

MATERIALS AND METHODS

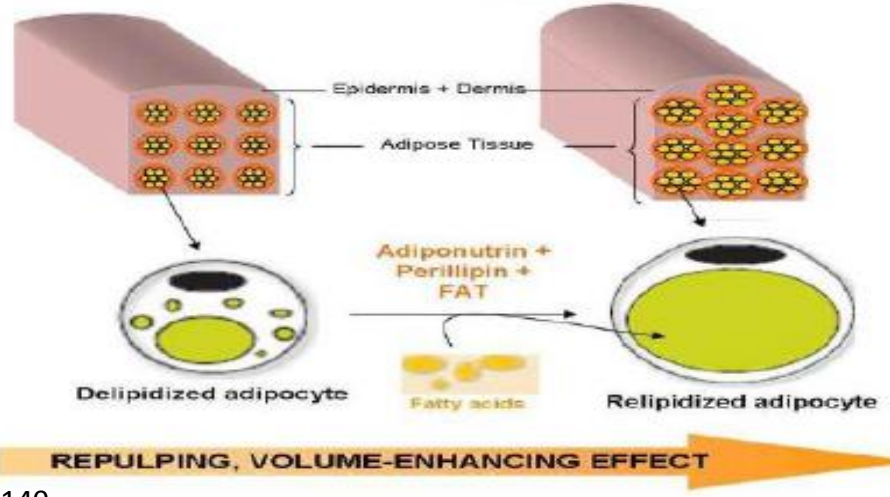
Materials

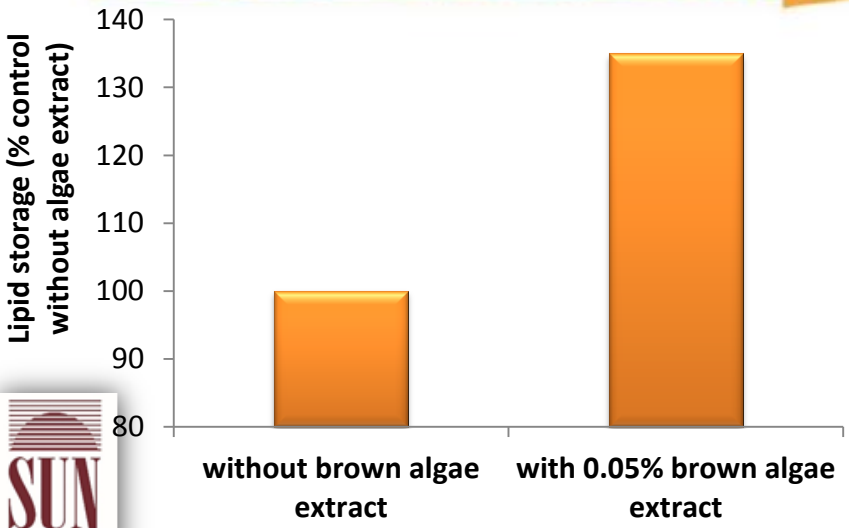
- Polyamide yarn was chosen as raw material. 70 denier 60 filament polyamide yarn was used in 85% PA and 15% Ea combination.

- Apricot kernel oil and *Dictyopteris membranacea (brown algae)* extract were chosen as active ingredients for plumping, lifting and moisturizing effects. The shell of microcapsules was polyurethane. Avarage particle size was 5µ.

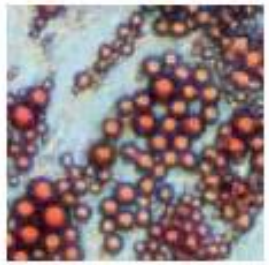
MATERIALS AND METHODS

Materials

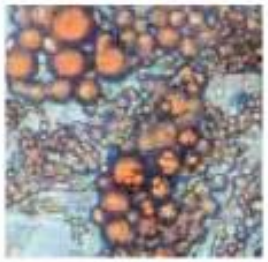




- *Dictyopteris membranacea*- brown algae extract stimulates the synthesis of proteins and transaction factor implicated in adipocytes nutrition.
- Brown algae extract increases lipids capture, the volume is restored.



without brown algae extract



with 0.05% brown algae extract

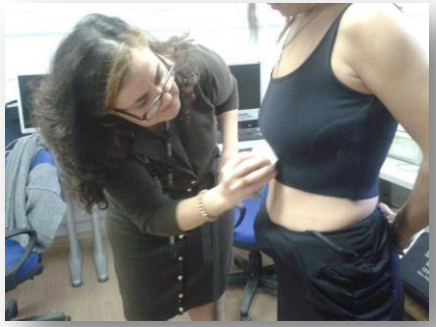
measuring the intensity from optical density at 540nm.

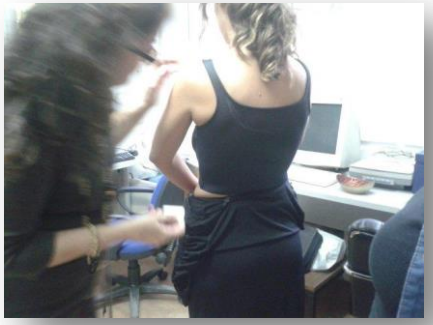
Induction of differentiation of human pre-adipocytes in the presence or absence of algae extract.

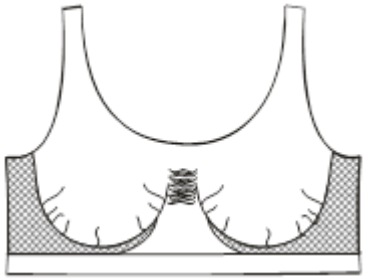
MATERIALS AND METHODS

Methods

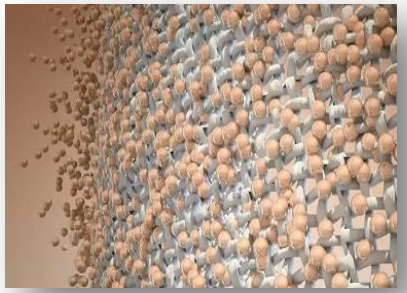
- Designing: Bras' structure and construction were investigated besides effectiveness of the active ingredients.





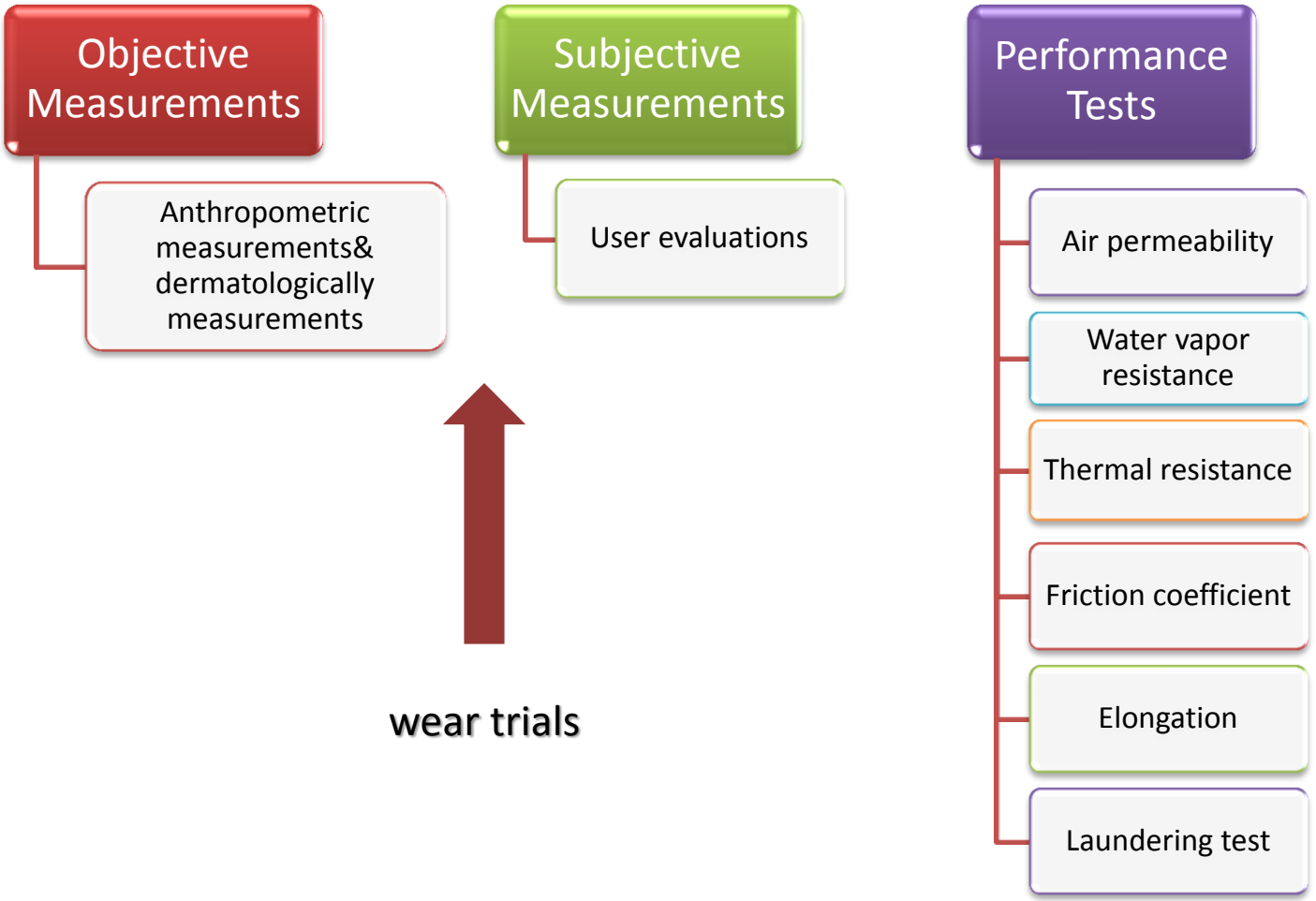


- Application: Microcapsules were applied to seamless knitted bras by exhaust method in finishing process with styrene-acrylic binder.

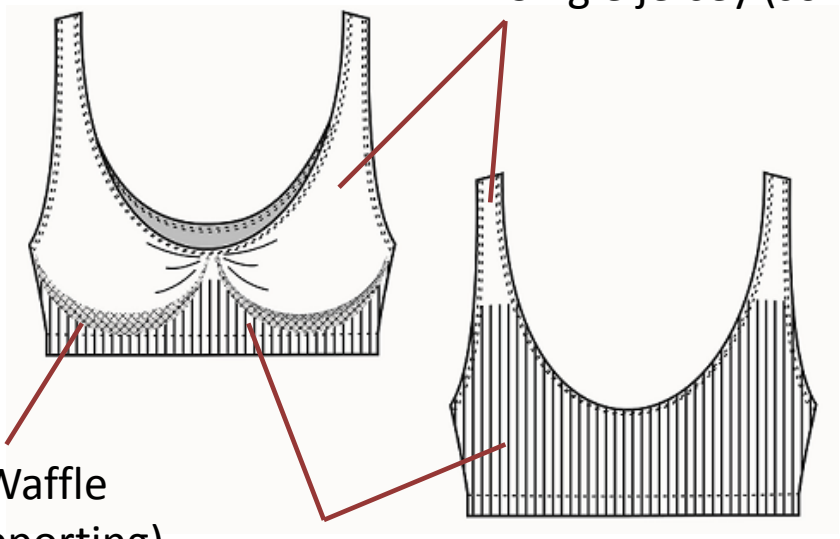


MATERIALS AND METHODS

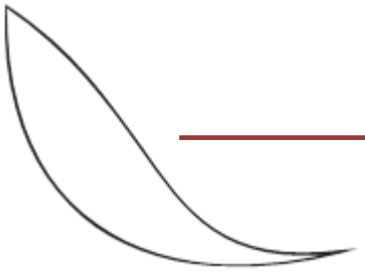
Methods



RESULTS AND DISCUSSION
Designing



Fabric weight,g/m² (ISO 3801)	Fabric weight,g/m² (after application)
276	288



Removable
bra pad,
Enhancing comfort

RESULTS AND DISCUSSION
Performance Tests

	Elongation (ISO 14704)						Air Permeability (ISO 9237)
	Transverse			Longitudinal			
	S,%	C,% (1min)	C,% (30min)	S,%	C,%(1 min)	C,% (30min)	l/m²s
Rib	132,1	**17,5**	**16**	136,2	**20**	**18**	**140,8**
Single Jersey	160,9	30	27	188,1	49	45	121
Waffle	163,8	18	16	181,3	28	25	100,6

Active parts

Thermophysiological comfort

	Thermal resistance, m²K/W	Water vapor resistance, m²Pa/W
S.Jersey (Double layer)	**18,6. 10^{-3}**	**5,4**
Rib	22,6. 10^{-3}	7,1
Waffle	27,3. 10^{-3}	7,9

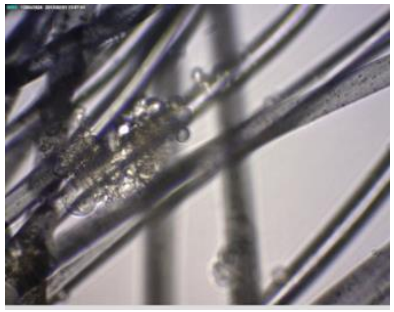
Friction coefficient (ISO 12945-2)		
	500 cycles	2000 cycles
Rib-S.jersey-Waffle Tube	4/5	4/5

RESULTS AND DISCUSSION
Performance Tests

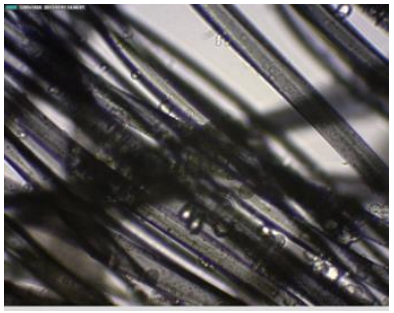
- Laundering tests were run with domestic washing machine for 30 times at 40˚C for 52min. Test pieces were investigated under optical microscope.

Number of washes	Rate of capsules after washing	Spesifications
0	100%	100%
5	70%	>65%
20	30%	>20%
30	**20%**	**<20%**

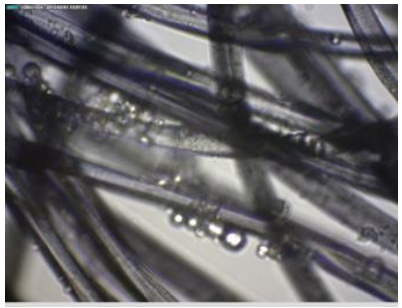
0 WASH



5 WASHES



20 WASHES



30 WASHES

RESULTS AND DISCUSSION
Objective & Subjective Measurements

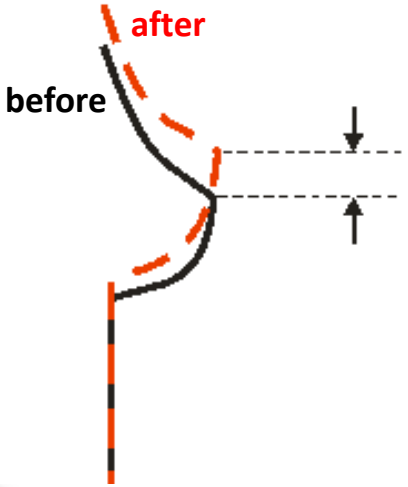
CENTIMETER MEASUREMENT (ANTHROPOMETRIC MEASUREMENT) on Breast Girth and Nipple Height; SELF-EVALUATION QUESTIONNAIRE

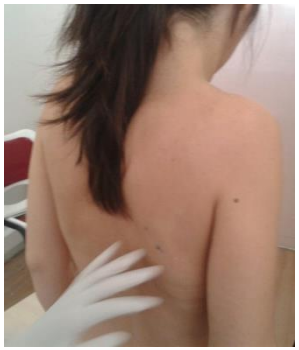
<table>
<tr><td>Reference of the product</td><td>Cosmetic Bra</td></tr>
<tr><td>Choise of study</td><td>Open study; comparative study; Subjects do not served as their own reference</td></tr>
<tr><td>Duration of study</td><td>28 days</td></tr>
<tr><td>Time measurments</td><td>T0 ve T after wear; 12-13/02/2014, T+7 days; 19-20/02/2014, T+28 days; 12-13/03/2014</td></tr>
<tr><td>Use of products</td><td>The bra was worn minimum of 8 hours/day during 28 days.</td></tr>
<tr><td>Population</td><td>
<table>
<tr><th colspan="2"></th><th>T0</th><th>T immediate (after wear)</th><th>T+7 days</th><th>T+28 days</th></tr>
<tr><td>CENTIMETER MEASUREMENT (ANTHROPOMETRIC MEASUREMENT)</td><td>breast girth, nipple height (treated subjects)</td><td>40</td><td>40</td><td>40</td><td>40</td></tr>
<tr><td colspan="2">SELF-EVALUATION QUESTIONNAIRE (treated subjects)</td><td></td><td></td><td></td><td>40</td></tr>
</table>
</td></tr>
<tr><td>Main selection criteria</td><td>Healthy female subjects; aged between 18 and 45 years old, having Anatolian Turks skin type
Having a size of bra equal to 80/85 or 90/95</td></tr>
</table>

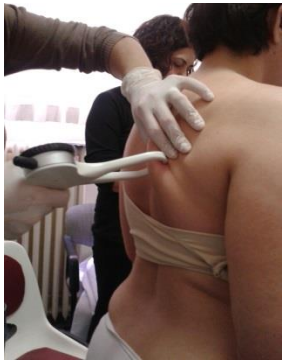
RESULTS AND DISCUSSION

Objective Measurements

- **Significant increase** in nipple height of 0.85cm
- **Significant decrease** in breast girth of 1cm
- **Significant increase** in skin moisture of 70.3% (determined by TEWAMETER)
- Cosmetic effect was obtained after 28 days of test.







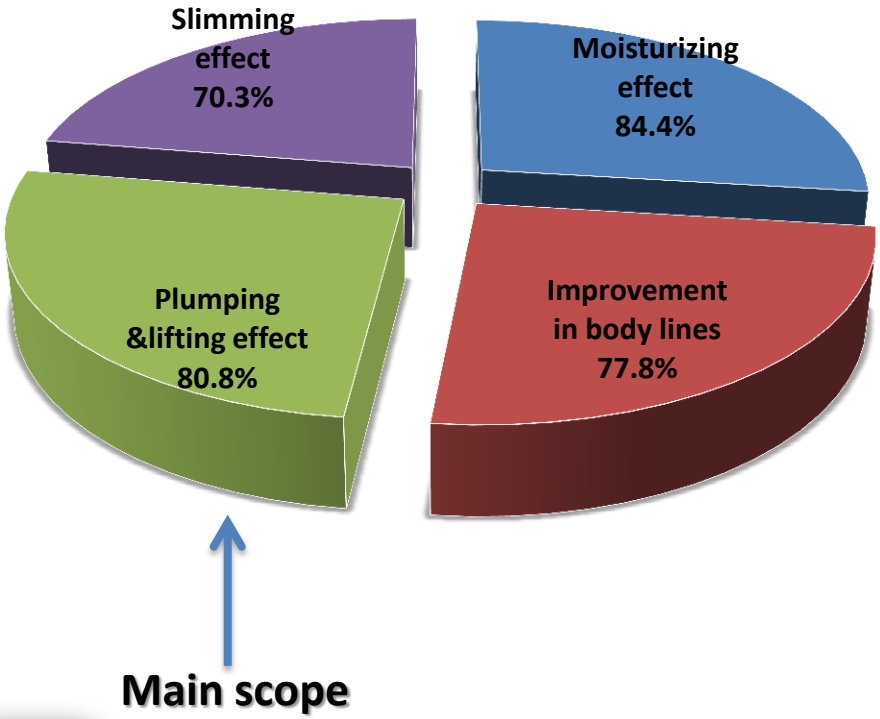
RESULTS AND DISCUSSION
Objective Measurements

- With the results obtained from anthropometric measurements, a new measurement chart was created according to Turkish womens' sizes.

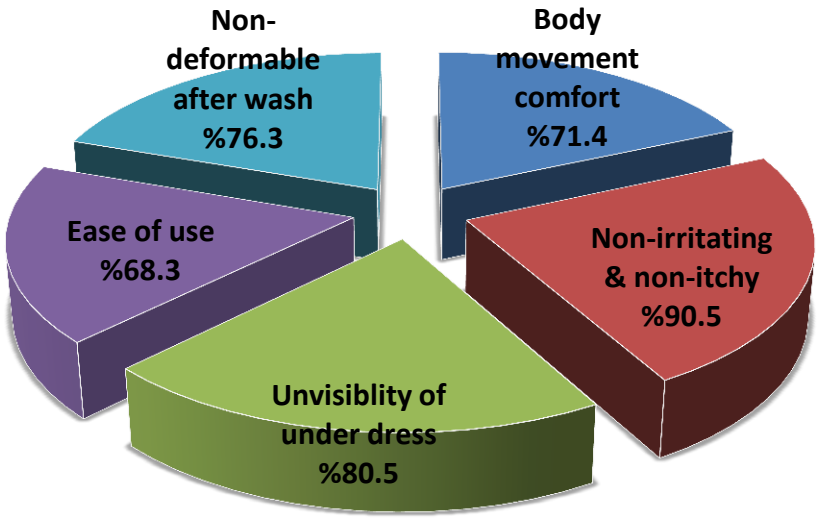
Sizes \ Waist Circumference	65	70	75	80	85	90	95	100	105	110
36	S	S	S							
38	S	S	M	M	M					
40			M	M	M					
42					L	L	L			
44						L	L	L		
46							L	L	XL	
48							XL	XL	XL	
50							XL	XL	XL	XL
52								XL	XL	XL
Breast Girth	80	86	92	96	100	104	108	112	118	122

RESULTS AND DISCUSSION
Subjective Measurements

Evaluation of effectiveness



Evaluation of comfort parameters



CONCLUSION

- New bra having dermatologically high clothing comfort and aesthetic care values with plumping, lifting and moisturizing effects was developed.
- The bra was documented in terms of comfort and effectiveness.
- There is contribution to the standardization of manufacture process by the developed test methods.
- Original bra has been marketed by the firm under its cosmetotextile brand as the project continues because of consumer demands.
- That brand is the first domestic innovative cosmetotextile brand in Turkey**.**
- The bra is protected under an **utility model**
- registration.

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THANK YOU…

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