Oral surgery

INFLUENCE OF MYRICETIN AND PIPERINE ON ABSORBABLE SUTURE.

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ABSTRACT:
AIM: To find the influence of myricetin and piperine on absorbable
Introduction
Piperine is an alkaloid present in black pepper (Piper nigrum), one of the most widely used spices.Piperine displays numerous pharmacological effects in which its antioxidant effect is significant.Myricetin is one of the vital constituents of different human food sources and refreshments including vegetables, teas and natural products, and is perceived principally for antioxidant property and hostile to inflammatory. Myricetin is an individual from the flavonoid class of polyphenolic compounds commonly seen in clove.It has high antioxidant activity.
MATERIALS AND METHODS :
100 mg of black pepper is used to obtain the piperine extract. Myricetin extract is prepared using guava leaves. Both the extracts were taken and PGA and vicryl were cut and immersed in for 6 hrs followed by air dry .The standards used here were ascorbic acid for antioxidant and diclofenac for anti inflammatory properties respectively.
Results and discussion:
From the data analysed the results stated that myricetin and piperine has good synergistic effect in case of anti inflammatory effect .But interactions of myricetin and piperine has negative effect in case of anti oxidant effect.
CONCLUSION
Thus it is clear that combination of containing piperine and myricetin coated sutures can be helpful in faster healing .SEM analysis and tensile strength was planned for future prospects of the study.
Keywords-Myrecitin,piperine,vicryl,PGA

INTRODUCTION :

Absorbable sutures are made from materials that the body can absorb normally over time. They're made of materials such as the fibers that line animal intestines or artificially created polymers that easily dissolve into the body.Absorbable suture materials are catgut , reconstituted collagen, polyglycolide (e.gDexon, Dexon II, Dexon S), poly(glycolide/lactide) random copolymer (e.g., Vicryl), antimicrobial-coated Vicryl (Vicryl Plus).(1) The time it takes for dissolvable or absorbable stitches to disappear can vary. Some may last for several months(2). The absorbable suture are the most effective materials which are placed for faster healing of the socket.

Piperine is an alkaloid present in black pepper (Piper nigrum), one of the most widely used spices belonging to the family of Piperaceae(4) .Piperine displays numerous pharmacological effects in which its antioxidant effect is significant(3). Alkaloids are components containing chemical compounds, basically nitrogen atoms. Piperine has many pharmacological effects and several health benefits, especially against chronic diseases, such as reduction of insulin-resistance, anti-inflammatory effects, and improvement of hepatic steatosis (5).These piperine exhibits antioxidant and anti-inflammatory properties .

Myricetin is one of the vital constituents of different human food sources and refreshments including vegetables, teas and natural products, and is perceived principally for antioxidant property and hostility to inflammation. Myricetin is an individual from the flavonoid class of

polyphenolic compounds commonly seen in clove.It has high antioxidant activity(6). Myricetin is structurally similar to fisetin, luteolin, and quercetin and is reported to have many of the same functions as these other members of the flavonol class of flavonoids(7,8).

The area of interest in this research is to infuse the natural components as piperine and myricetin in absorbable suture.

Materials and methods:

100 mg of black pepper is used to obtain the piperine extract. Myricetin extract is prepared using guava leaves. Both the extracts were taken and PGA and vicryl were cut and immersed in for 6 hrs . These sutures were air dried for 24 hrs followed by analysing for antimicrobial, anti inflammatory and sem analysis. The standards used here were ascorbic acid for antioxidants and diclofenac for anti-inflammatory properties respectively.

Results and discussion:

From the data analysed the results stated that myricetin and piperine has good synergistic effect in case of anti inflammatory effect .But interactions of myricetin and piperine has negative effect in case of anti oxidant effect.

Anti inflammatory activity

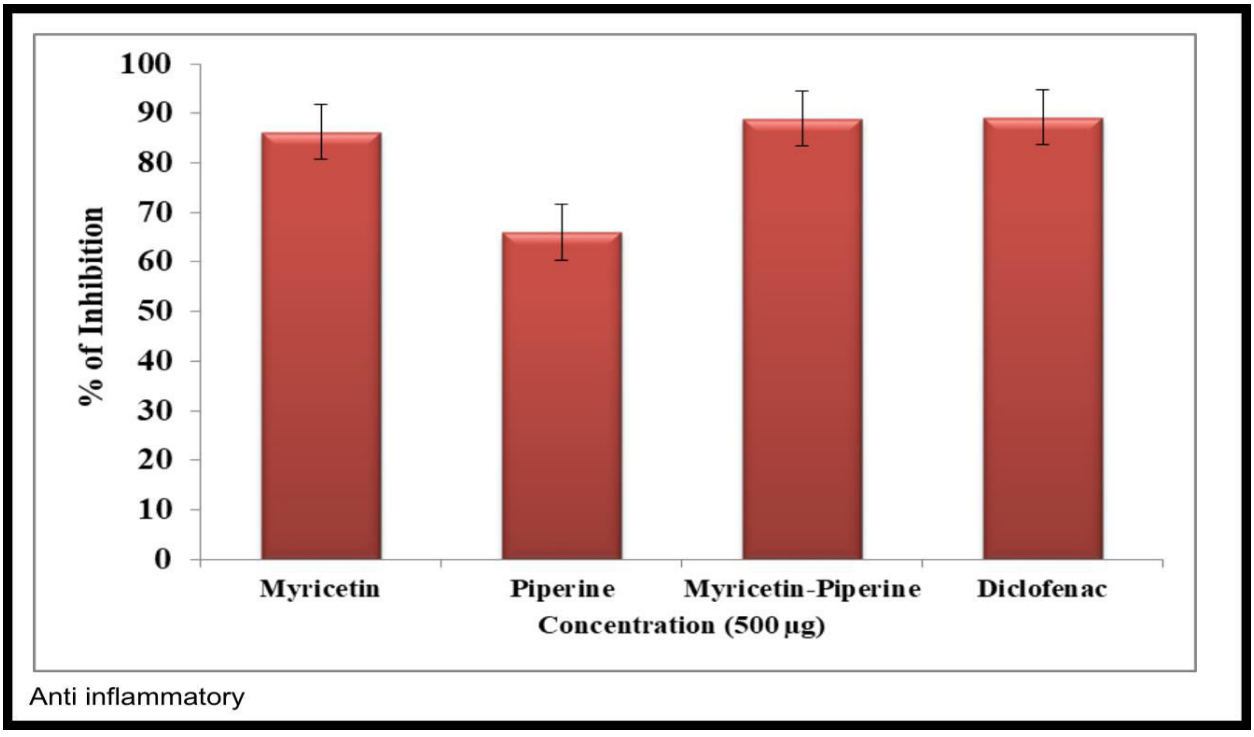


Fig1-It represents the anti-inflammatory activity of myricetin ,piperine and the combination of both in comparison to Diclofenac.

From the above data ,it is clear that the anti-inflammatory activity of myricetin with value 87 and piperine with value 67 is high ,but no comparison with its counterpart in anti-inflammatory activity where the synergic effect is high . The combined effect had an anti-inflammatory activity of value 82 .Thus showing no significant synergistic effect with higher value .

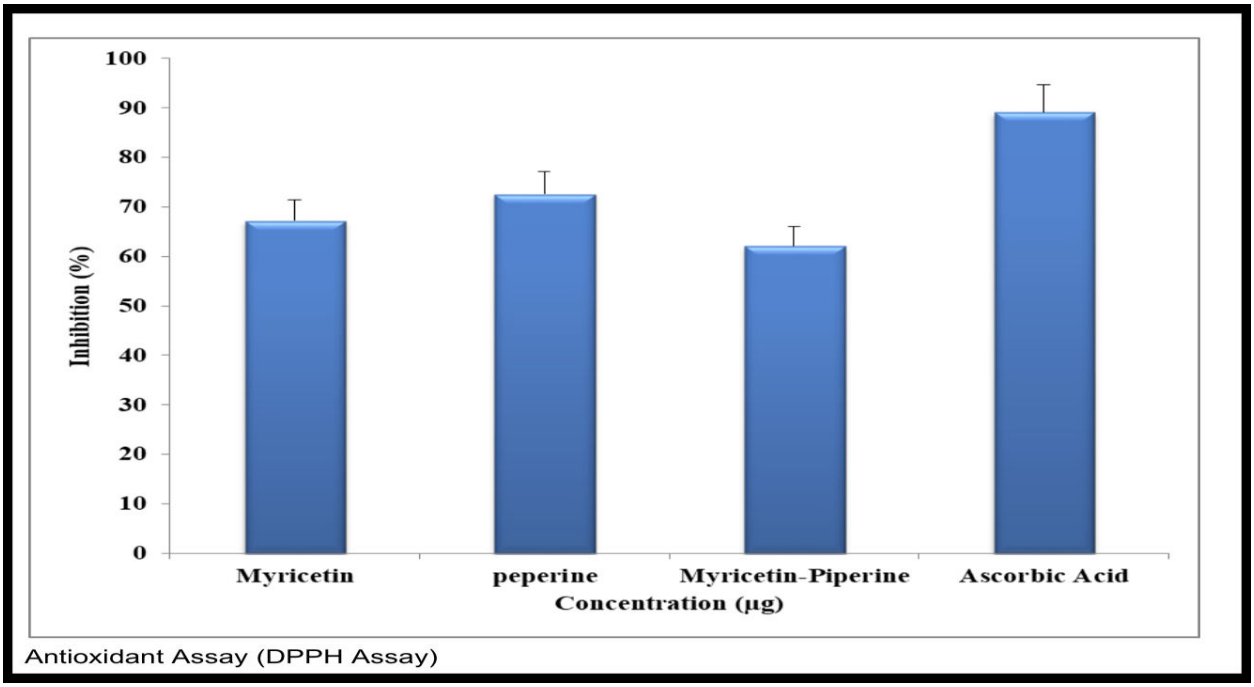
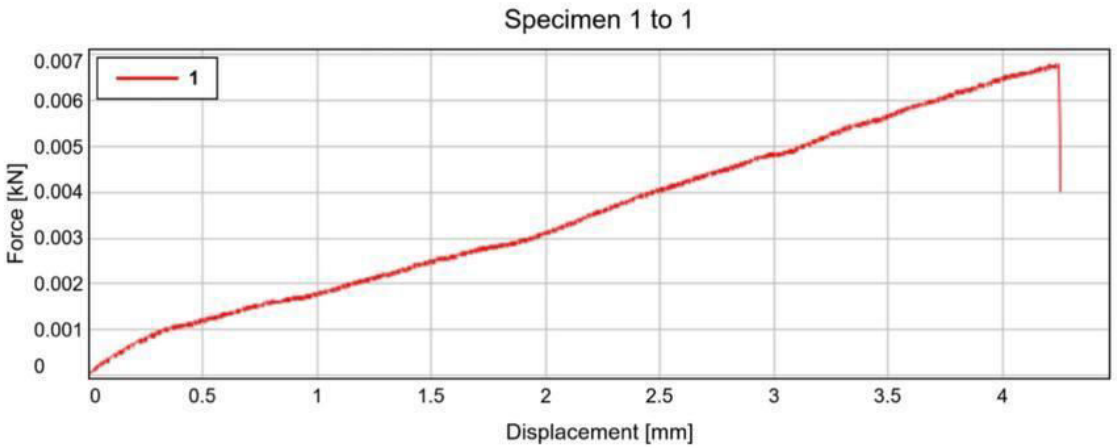


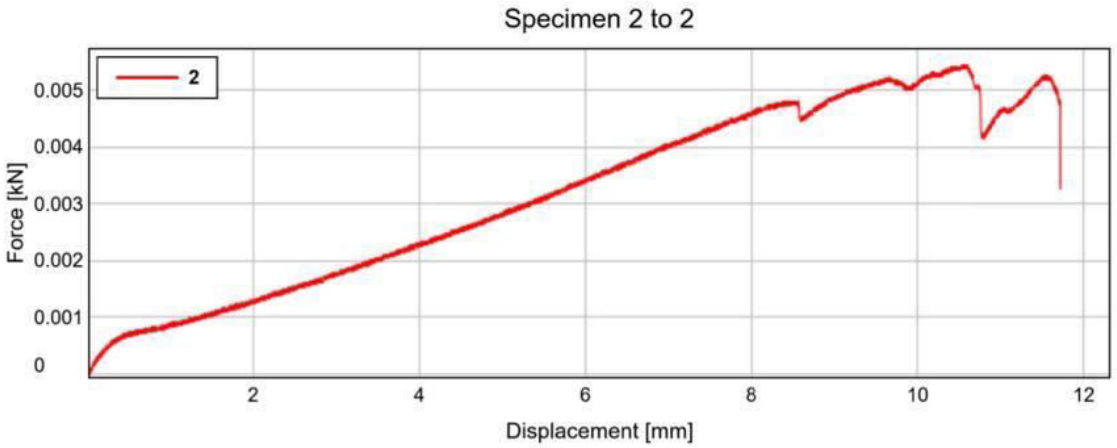
Fig-2 It represents the antioxidant activity of myricetin ,piperine and the combination of both in comparison to Ascorbic acid.

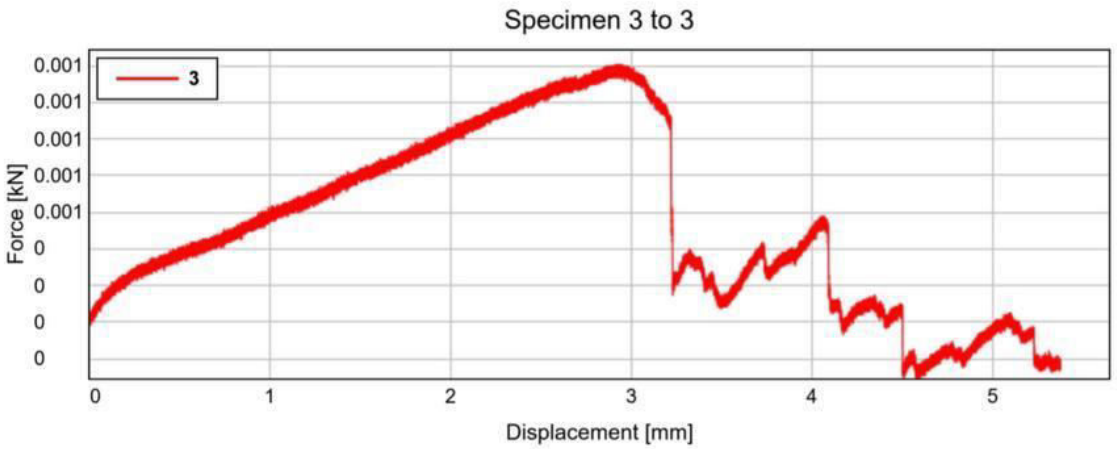
From the above data ,it is clear that the antioxidant activity of myricetin is 68 and in the case of piperine it is high with a value of 75 ,But when combined together these do not show a significant synergistic effect with a value lower than its individual components. This method helps us to minimize postoperative complications like swelling.

In both scenarios the anti-inflammatory and the antioxidant value of myricetin, piperine and the combination of both in comparison were compared with Diclofenac and ascorbic acid respectively.

Tensile strength testing







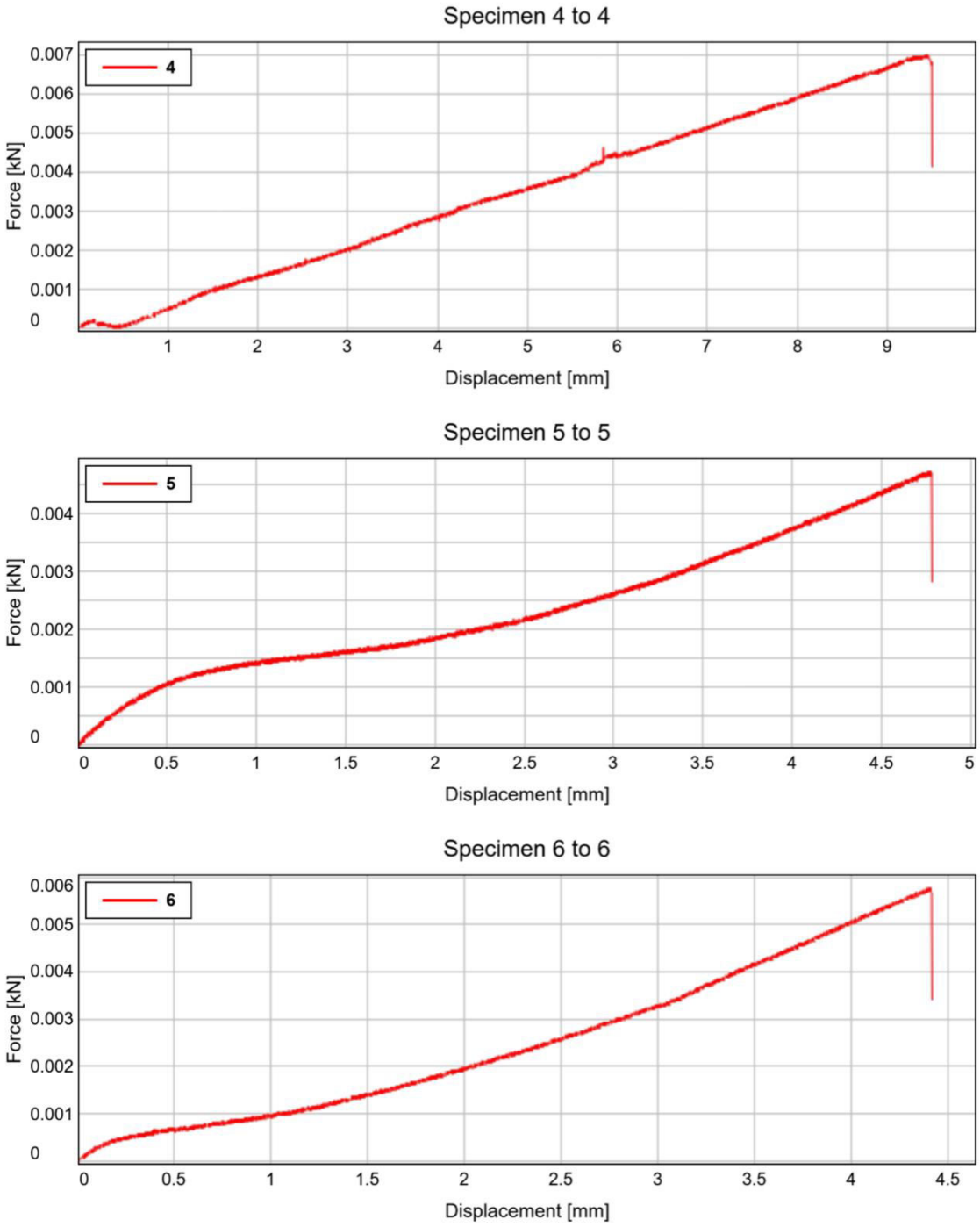


Fig-3- Represents the Displacement values of specimen 1, specimen 2, specimen 3,specimen 4,specimen 5, specimen 6.

	Maximum Force [N]	Tensile stress at Tensile strength [MPa]	Tensile strain (Displacement) at Break (Standard) [%]
1	6.80	1061.36	8.50
2	5.47	854.35	23.44
3	1.41	180.95	10.74
4	6.98	1079.20	18.99
5	4.73	738.39	9.56
6	5.77	898.48	8.83

Table 1: It describes the specimen's maximum strength,tensile stress and tensile strain .

	Specimen label	Tensile stress at Break (Standard) [MPa]
1	PGA	1055.83
2	vicryl	747.62
3	VICRYL 4.4	-32.28
4	VICRYL 7.2	1060.62
5	PGA 4.4	731.61
6	PGA 7.2	893.90

Table 2 -It describes the Specimen Name and tensile stress at break (standard)(MPa)

Sem analysis

Piperine

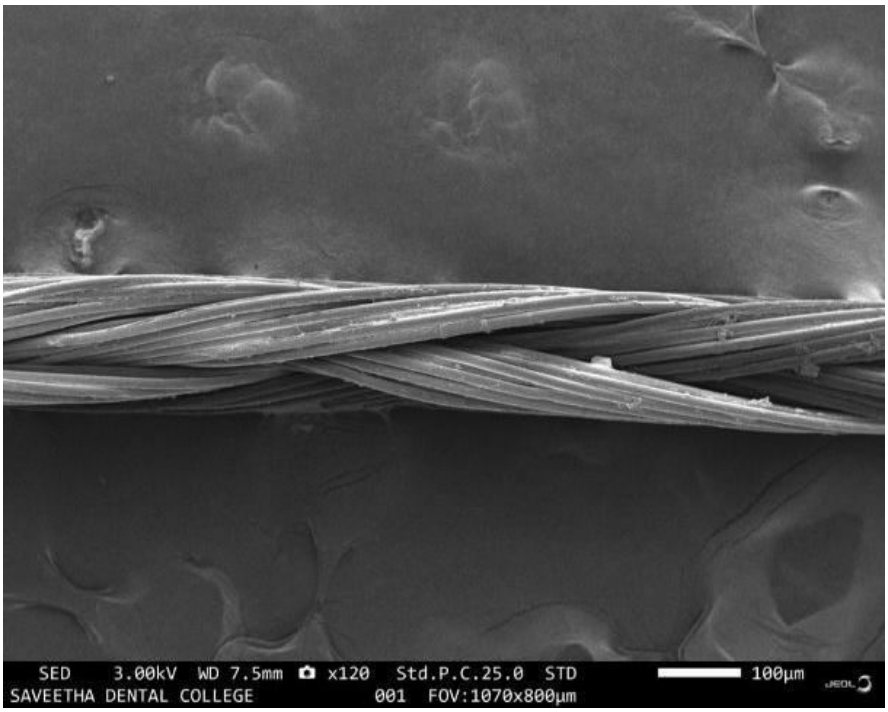


Figure 5 represents the sem analysis for piperine

Myricetin

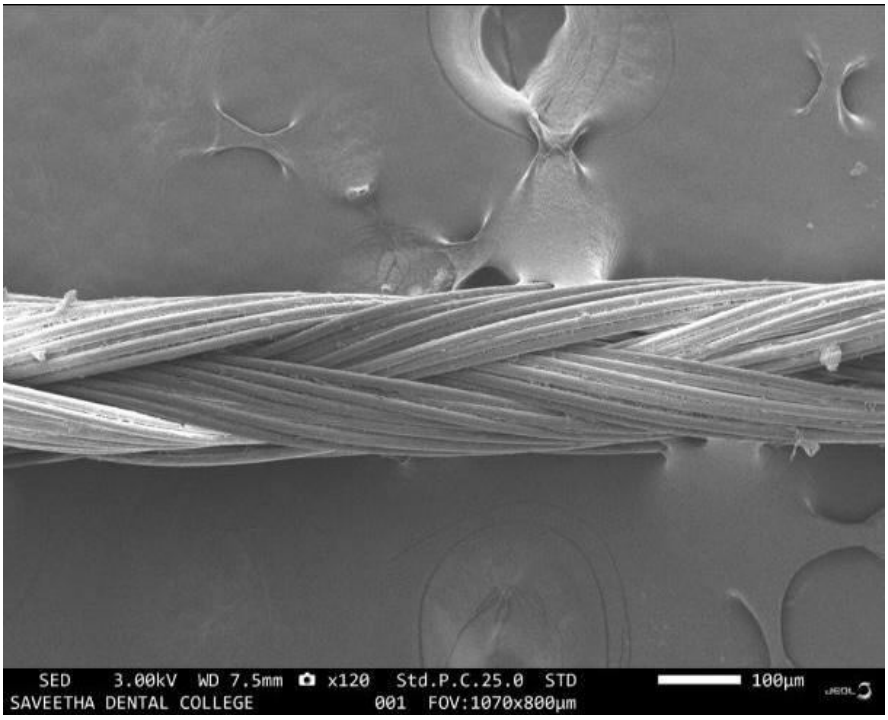


Figure 6 represents the sem analysis for myricetin

Control group

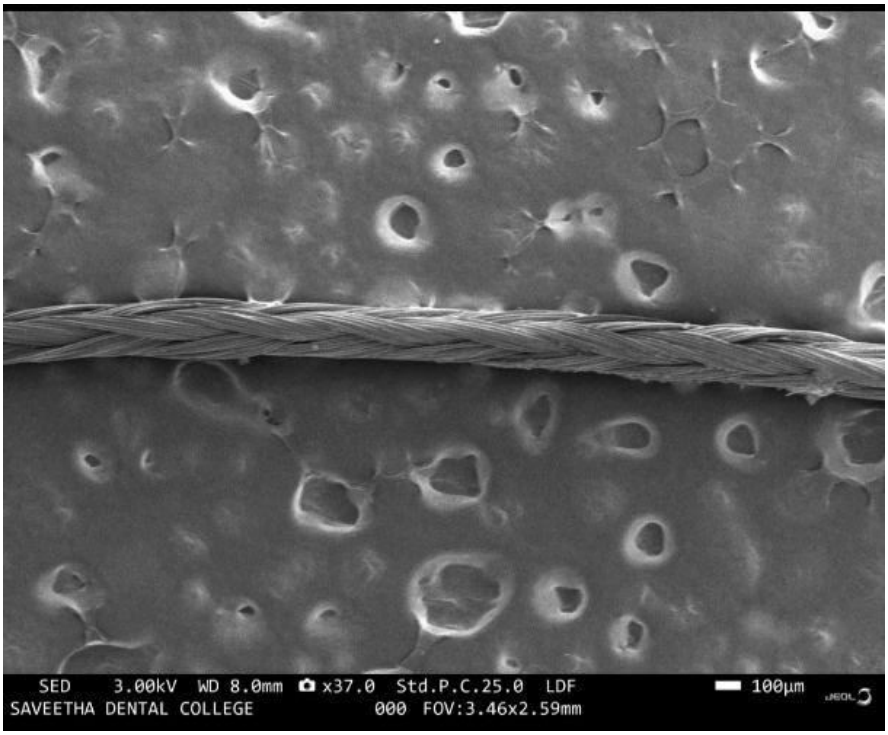


Figure 7 represents the sem analysis for control group.

Discussion :

The anti inflammatory drugs and anti oxidant drugs are used for many inflammatory disorders. The common drugs to provide this anti-inflammatory activity are diclofenac ,aceclofenac, ketorolac and ascorbic acid. These anti inflammatory drugs lead to side effects causing gastrointestinal disorders ,etc . Chubasik et al. in his study has also explained the prevalence of usage of these drugs and its effects on the body. (10)

The natural components of piperine and myricetin obtained from pepper and fruits respectively are proved to provide many beneficial effects over others. Previous studies have also shown the pharmacokinetic effect of piperine and myricetin in the analysis for oral supplementations. Vijayakumar et al. in his study explained the combined effects of piperine and the beneficence on Cytoprotective and immunomodulating properties (11).

According to the previous studies , the absorbable suture is made of materials such as the fibers that line animal intestines or artificially created polymers that easily dissolve into the body (12). These materials generally lose most of their tensile strength in 1 to 3 weeks and are fully absorbed within 3 months. Kundra et al. In his study has emphasised the importance of

absorbable suture and its effect on the oral tissues(13). The suture provides faster healing and also promotes in preventing the food debris and thus providing an antimicrobial effect (14) .

Hence when we incorporate the piperine and myricetin which is obtained from natural components in the sutures, they provide enormous benefits and result in the healing and betterment of the socket . Normally the absorbable suture does not provide the tensile strength , whereas when the materials are incorporated it provides a better tensile strength and thereby increases the strength of the suture and decreases the healing period.

CONCLUSION

Thus it is clear that combination of containing piperine and myricetin coated sutures can be helpful in faster healing .SEM analysis and tensile strength has also shown a great result for strengthening of suture. Hence these suture can be used among clinical trials in the further studies and thereby can gain better results in the forthcoming.

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