Electronic Supplementary Material (ESI) for RSC Advances.

The following GC-MS and HPLC data (accepted for publication) show the presence of bioactive constituents and indicate that *SM* contains potential anti-cancer agents acting in synergistic manner against breast cancer cell proliferation.

A representative GC-MS chromatogram of the extract from herbal constituents of SM is provided in **Figure S1**. The obvious complexities of the sample are visible. Identification of the samples by their mass spectrum identity is carried out by matching scores from the MS library. As elucidated by GC-MS spectrum, the various chemical constituents and their retention times, molecular formula, molecular weight and percentage compositions are given in **Table S1**.

Table S1 Major phytochemical components identified through the gas chromatography-mass spectrometry (GC-MS) analysis of ethanol extract of herbal constituents of SM.

S. No.	Retention time (min)	Name of the compound	Molecular formula	Molecular weight	Peak Area %
1.	2.46	2-Cyclohexen-1-one, 4-hydroxy-	$C_6H_8O_2$	112	8.04
2.	4.65	2-Furancarboxaldehyde, 5-(hydroxymethyl)- [5-Hydrxoymethylfurfural]	$C_6H_6O_3$	126	16.42
3.	6.72	1,2,3-Benzenetriol [Pyrogallol]	$C_6H_6O_3$	126	57.62
4.	8.39	1,6-Anhydro-á-D-glucopyranose [Levoglucosan]	$C_6H_{10}O_5$	162	13.32
5.	9.68	7,8-Epoxylanostan-11-ol, 3-acetoxy-	$C_{32}H_{54}O_4$	502	1.26
6.	13.61	Dipalmitin	$C_{35}H_{68}O_5$	568	2.34
7.	16.44	Trilinolein	$C_{57}H_{98}O_6$	878	1.00

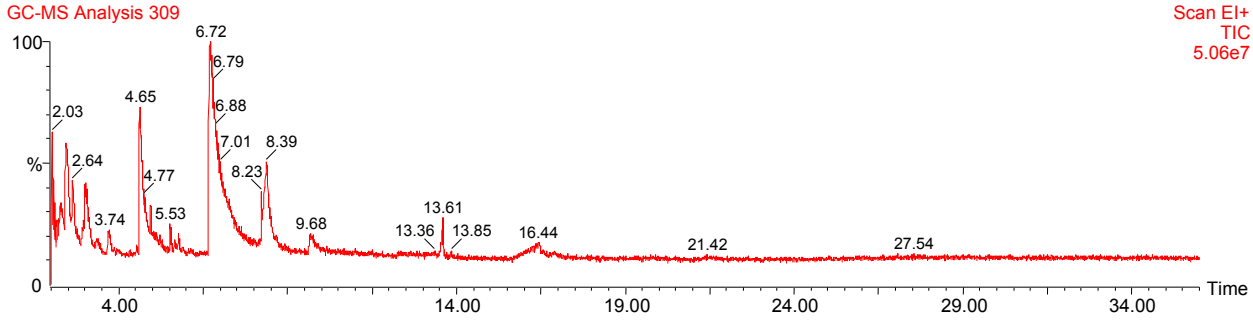

Fig. S1. A representative GC-MS chromatogram of ethanol extract of herbal constituents of SM.

Compounds such as 1,2,3-Benzenetriol [Pyrogallol]; 2-Furancarboxaldehyde,5-(hydroxymethyl)- [5-Hydrxoymethylfurfural]; 1,6-Anhydro-α-D-glucopyranose [Levoglucosan]; 2-Cyclohexen-1-one, 4-hydroxy-; Dipalmitin; 7,8-Epoxylanostan-11-ol, 3-acetoxy- and Trilinolein are some of the major compounds found in the extract. Earlier studies indicated that the secondary metabolites such as flavonoids may have undergone cleavage at the C-ring (right with the functional group C=O) as suggested by Buchner *et al*., (2006), possibly giving rise to the above compounds, including substituted mono-, di- and tri-hyrdroxybenzenes (Moldoveanu, 2009; Rodgman and Perfetti, 2009).

Fig. S2 and **Fig. S3** show the HPLC chromatogram of the standard flavonoids used and the chromatogram of representative sample, respectively. As shown in **Fig. S2**, the five flavonoid standards used were gallic acid, caffeic acid, rutin, quercetin and ferulic acid. The standards were selected based on the most commonly found and studied flavonoids in herbs and vegetables. **Fig. S3** revealed the presence of gallic acid, caffeic acid, rutin, quercetin and ferulic acid. The peak area and concentrations of standard flavonoids and flavonoids identified in the sample are portrayed in **Table S2** and **Table S3** The major flavonoids in the extract are gallic acid (992.25 µg/g), quercetin (335.75 µg/g), caffeic acid (156.6 µg/g), followed by rutin (6.0 µg/g) and ferulic acid (0.3 µg/g).

TABLE S2

Retention time and area of five kinds of standard flavonoids

Detector A (280nm)				
Retention Time (min)	**Area**	**Height**	**Concentration (µg/ml)**	**Name**
5.750	56744802	2757981	10.00	Gallic acid
9.450	17443471	1882880	10.00	Caffeic acid
10.517	42056735	3198304	10.00	Rutin
12.400	13396467	1402866	10.00	Quercetin
24.175	2810655	36358	10.00	Ferulic acid

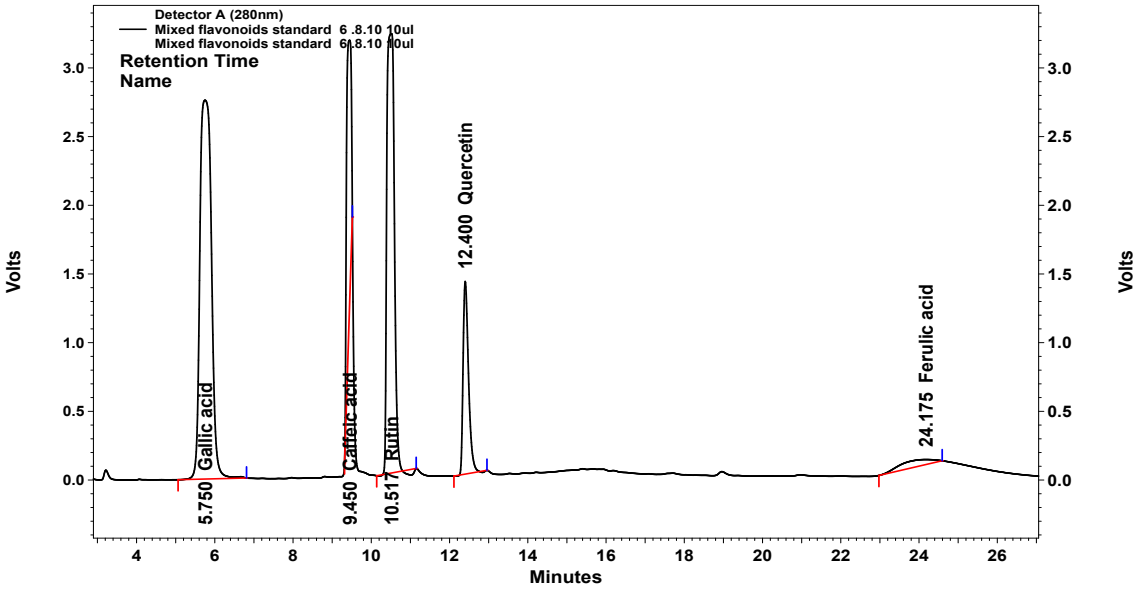

Fig. S2

HPLC-DAD chromatogram of the flavonoid standards used in the study. The flavonoid chromatogram of gradient HPLC was detected using C18 column monitored at 280 nm.

Standards: Gallic acid, Caffeic acid, Rutin, Quercetin and Ferulic acid. ***Operating parameters:*** Mobile Phase: Solvent A- Water: Acetic acid (25:1), Solvent B- Methanol; Pumps (Binary Gradient); T.Flow: 1.000 ml/min; P.Max: 400.0 kgf/cm^2; P.Min: 0.0 kgf/cm^2; CTO-10 ASvp, Temperature: 40 °C; SPD-10 Avp (Det.A): Lamp: D_2; Polarity: +Ve.

TABLE S3

Retention time, area and concentrations of five different flavonoid constituents present in the ethanol extract of herbal constituents of SM.

Detector A (280nm)				
Retention Time (min)	**Area**	**Height**	**Concentration (µg/g of sample)**	**Name**
5.917	18772693	9094	992.25	Gallic acid
9.000	910911	115	156.60	Caffeic acid
10.217	94371	4068	6.00	Rutin
12.525	1499277	54846	335.75	Quercetin
24.108	2182	125	0.30	Ferulic acid

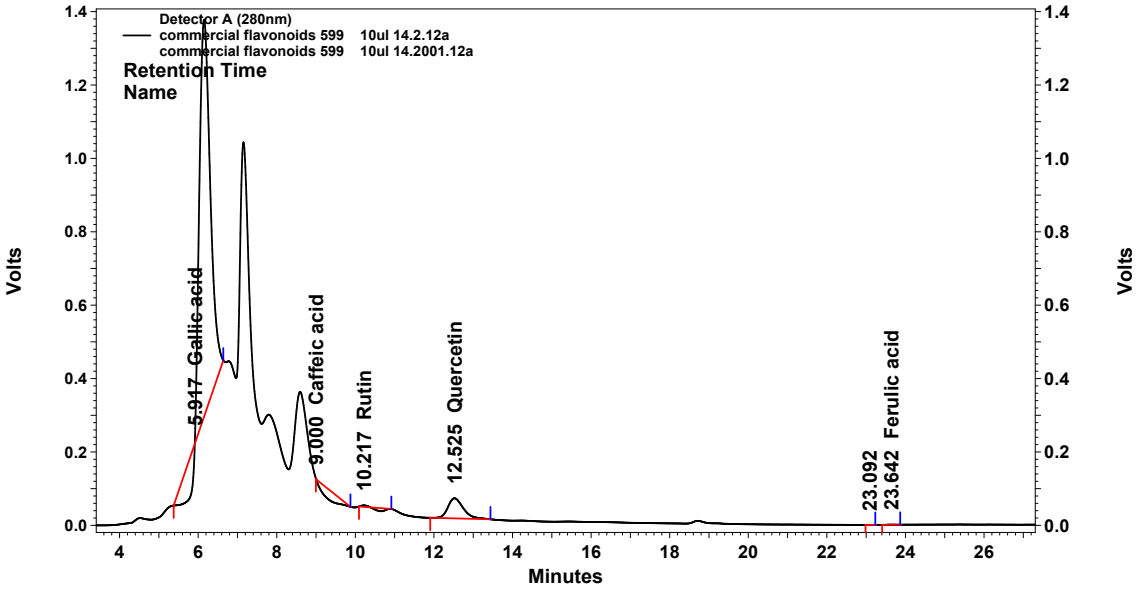

Fig S3

Chromatogram of representative sample (extract of herbal constituents of SM) tested in the study. The flavonoids were detected using C18 column monitored at 280 nm.

Operating parameters: Mobile Phase: Solvent A- Water: Acetic acid (25:1), Solvent B- Methanol; Pumps (Binary Gradient); T.Flow: 1.000 ml/min; P.Max: 400.0 kgf/cm^2; P.Min: 0.0 kgf/cm^2; CTO-10ASvp, Temperature: 40 °C; SPD-10 Avp(Det.A): Lamp: D_2; Polarity: +Ve.

Phytochemicals have attracted a growing attention as anti-cancer agents due to their ability to modulate apoptosis signalling pathways and the study of herbal formulations from traditional medicine represents a challenging research field, since it has been applied for the treatment of cancers for many years. In this perspective, Shemamruthaa, a phytochemical combinant constituting dried flowers of Hibiscus rosasinensis, fruits of Phyllanthus emblica and honey was formulated and evaluated for the first time with a view to potentiate more intense anticancer property.