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Let  $\mathbf{k}$  be a field containing the invertible elements  $\alpha, s$  with  $s^2 - 1 \neq 0$ . If  $M$  is a compact oriented 3-manifold, let  $K(M)$  be the Kauffman skein space of  $M$  over  $\mathbf{k}$ , generated by isotopy classes of unoriented framed links in  $M$  quotient by the subspace generated by the Kauffman skein relations. The relative Kauffman skein space of the cylinder with  $2n$  points on the boundary is isomorphic to the  $n$ th Birman-Murakami-Wenzl (BMW) algebra  $K_n$ . Recall that Beliakova and Blanchet have constructed the idempotents of  $K_n$  indexed by Young diagrams. In this paper, we study the relative Kauffman skein space of the disk with its boundary colored by three idempotents of the BMW algebras indexed by Young diagrams  $\lambda, \mu$  and  $\nu$ . We discuss the admissibility and dimension of such skein spaces when  $\alpha$  and  $s$  are roots of the unity. The tensor product decomposition problem in  $K(S^1 \times D^2)$  will be discussed as well. (Received September 18, 2005)